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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

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First Named Inventor or Application Identifier

HARUO MACHIDA

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APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

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| <input type="checkbox"/> Fee Transmittal Form
(Submit an original, and a duplicate for fee processing) | | |
| <input checked="" type="checkbox"/> Specification | Total Pages | 107 |
| <input checked="" type="checkbox"/> Drawing(s) (35 USC 113) | Total Sheets | 19 |
| <input checked="" type="checkbox"/> Oath or Declaration | Total Pages | 1 |
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<i>[Note Box 5 below]</i> | | |

 DELETION OF INVENTOR(S)

Signed Statement attached deleting inventor(s)
named in the prior application, see 37 CFR
1.63(d)(2) and 1.33(o).

5. Incorporation By Reference (useable if Box 4c is checked)
The entire disclosure of the prior application, from which a copy of the
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ADDRESS TO: Assistant Commissioner for Patents
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04-84-06

6. Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
- Computer Readable Copy
 - Paper Copy (identical to computer copy)
 - Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

- 8. Assignment Papers (cover sheet & document(s))
- 9. 37 CFR 3.73(b) Statement Power of Attorney
- 10. English Translation Document (if applicable)
- 11. Information Disclosure Statement (IDS)/PTO-1449 Copies of IDS Citations
- 12. Preliminary Amendment
- 13. Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
- 14. Small Entity Statement filed in prior application
Statement(s) Status still proper and desired
- 15. Certified Copy of Priority Document(s)
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- 16. Other: _____

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:

 Continuation Divisional Continuation-in-part (CIP) of prior application No. ____/_____
 18. CORRESPONDENCE ADDRESS

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CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
	TOTAL CLAIMS (37 CFR 1.16(c))	108-20	88	X \$ 18.00 =	\$1584.00
	INDEPENDENT CLAIMS (37 CFR 1.16(b))	16-3 =	13	X \$ 78.00 =	\$1014.00
	MULTIPLE DEPENDENT CLAIMS (if applicable) (37 CFR 1.16(d))			\$260.00 =	-
				BASIC FEE (37 CFR 1.16(e))	\$ 690.00
				Total of above Calculations =	\$3288.00
	Reduction by 50% for filing by small entity (Note 37 CFR 1.9, 1.27, 1.28).				
				TOTAL =	\$3288.00

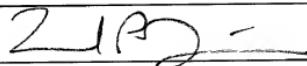
19. Small entity status

- a. A Small entity statement is enclosed
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20. A check in the amount of \$3288.00 to cover the filing fee is enclosed.21. A check in the amount of \$ _____ to cover the recordal fee is enclosed.

22. The Commissioner is hereby authorized to credit overpayments or charge the following fees to Deposit Account No. 06-1205:

- a. Fees required under 37 CFR 1.16.
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED	
NAME	Leonard P. Diana, Esq. (Reg. No. 29,296)
SIGNATURE	
DATE	April 5, 2000

INFORMATION PROCESSING APPARATUS, INFORMATION
PROCESSING SYSTEM, CONTROL METHOD OF INFORMATION
PROCESSING APPARATUS, CONTROL METHOD OF INFORMATION
PROCESSING SYSTEM, AND STORAGE MEDIUM HAVING PROGRAMS
5 CAPABLE OF BEING READ AND STORED BY COMPUTER

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to an information
10 processing apparatus capable of being communicated with
external apparatuses through a fixed communication
medium, an information processing method and a storage
medium having programs capable of being read by a
computer stored, and particularly relates to a method
15 for installing a driver for controlling an external
apparatus.

Related Background Art

Recently, under the environment of network system,
peripheral devices such as PC (Personal Computer), a
20 printer, an image read device (scanner), and a digital
camera are popularized; a network such as LAN is
popularized; and the need increases in which a printer,
a modem and an image read device are owned jointly on
the network by computers connected to the network.

25 The devices such as a printer, a scanner and so on
are owned jointly on the network, as described above,
to thereby attain the environment in which the

computers connected to the network can use all devices connected to the network.

Since connecting information of these peripheral devices is displayed every kind of the peripheral devices (for example, a printer is displayed every printer, and a scanner is displayed every scanner), the connecting circumstances have to be checked every time, which makes operation hard to understand, or where very many peripheral devices are connected onto the network, unnecessary peripheral devices are also displayed, resulting in poor operating properties.

However, it is necessary for using these devices to install a driver on a computer connected on the network. The installing procedures are different every device, and the kinds of drivers have to be selected, thus making operation hard to understand. There poses a further problem that the installing operation is very cumbersome.

Further, with respect to all devices connected to the network, it is necessary to always watch updating information of drivers, and when the driver is updated, the driver has to be installed again by the individual computer connected to the network, thus posing a problem that work efficiency is bad.

25

SUMMARY OF THE INVENTION

The present invention has been achieved in order

to solve the aforementioned problems. A first object
of the present invention is to provide an information
processing method for indicating installation in a user
interface having the system circumstances of peripheral
5 devices owned jointly on a network, automatically
installing drivers of the peripheral devices to thereby
exceptionally relieve a driver setting operating burden
caused on the user required at the time of
installation, thus enabling the driver installing
10 operation effective.

A second object of the present invention is to
provide an information processing method for performing
installation of a plurality of drivers corresponding to
a plurality of peripheral devices by a single operation
15 indication to thereby eliminate a burden for performing
installing indications by times of the peripheral
devices desired for installing processing, thus
enabling the driver installing operation effective.

A third object of the present invention is to
20 provide an information processing method for
displaying, at the time of driver installation, the
whole system circumstances and the system circumstances
of user networks of peripheral devices suitably
selected from the whole system circumstances, and
25 executing necessary driver installing processing in
accordance with the indication of registration of the
peripheral devices relative to the network to thereby

exceptionally eliminate a driver setting operating burden on a user required at the time of driver installation in prior art thus enabling the driver installing operation effective.

5 A fourth object of the present invention is to provide an information processing method for updating, where peripheral devices to update drivers incorporated in an information processing apparatus are designated, the drivers of the information processing apparatus on 10 the basis of a version of the drivers of the peripheral devices incorporated in the information processing apparatus and a version of drivers of peripheral devices owned jointly on a network to thereby enabling updating of the drivers of the devices owned jointly on 15 the network more simply and in a short period of time, and enabling exceptional enhancement of updating work efficiency of a user.

A fifth object of the present invention is to provide an information processing method for 20 recognizing, where an updating notice of driver is received from an external device, version information of drivers of peripheral devices incorporated in an information processing apparatus to update the drivers of the peripheral devices, thus enabling incorporation 25 of the latest drivers into the information processing apparatus always.

The first invention according to the present

invention provides an information processing apparatus
(PC 111) capable of communicating with an external
device (such as a control server 103 shown in Fig. 1)
through a network (LAN 100 shown in Fig. 1),
5 comprising: acquiring means (CPU 2 shown in Fig. 2 for
executing processing based on a flow chart shown in
Fig. 10) for acquiring device information of peripheral
devices owned jointly on the network from an external
device; system display control means (device display
10 window 300 shown in Fig. 3) for displaying the system
circumstances of the peripheral devices owned jointly
on the network on a user interface with an icon on the
basis of said device information acquired from said
external device by said acquiring means; indication
means (501 in Fig. 4) for indicating, in the user
15 interface in which the system circumstances are
displayed by said system display control means,
installation of a driver corresponding to the
peripheral device owned jointly on the network; and
peripheral device owned jointly on the network; and
20 installation control means (CPU 2 shown in Fig. 2 for
executing processing based on a flow chart shown in
Fig. 10) for acquiring the setting information of the
driver for which installation is indicated by said
indication means to execute automatic installation
25 processing of the driver.

The second invention of the present invention
depending on the first invention provides an

information processing apparatus wherein in the user
interface on which the system circumstances are
displayed by said system display control means, the
installation of the driver corresponding to the
5 plurality of peripheral devices owned jointly on the
network can be indicated by a single operating
indication.

The third invention according to the present
invention provides an information processing apparatus
10 capable of communicating with an external device
through a network, comprising: device information
acquiring means for acquiring device information of
peripheral devices owned jointly on the network from an
external device; system display control means for
15 displaying the whole system circumstances of peripheral
devices owned jointly on the network, and the system
circumstances of a use network of peripheral devices
selected suitably from said whole system circumstances
on a user interface with icon capable of being
20 recognized on a display, on the basis of said device
information acquired from said external device by said
device information acquiring means; indication means
for indicating registration of the peripheral devices
on said user network; and install control means for
25 executing, where registration of peripheral devices is
newly indicated relative to said user network by said
indication means, install processing of drivers

corresponding to said peripheral devices.

The fourth invention according to the present invention provides an information processing apparatus capable of communicating with an external device through a network, comprising: recognition means for recognizing version information of drivers of peripheral devices incorporated in said information processing apparatus; acquiring means for acquiring version information of drivers of peripheral devices owned jointly on the network from said external device; indication means for indicating peripheral devices to update drivers incorporated in said information processing apparatus; and updating means for updating the drivers of the peripheral devices designated by said designation means on the basis of the version information of the drivers acquired by said acquiring means and the version information of the drivers recognized by said recognition means.

The fifth invention according to the present invention provides an information processing apparatus capable of communicating with an external device through a network, comprising: receiving means for receiving updating notice including version information of drivers of peripheral devices from the external device recognition means for recognizing version information of drivers of peripheral devices incorporated in said information processing apparatus;

and updating means for updating the drivers indicated by said indication means on the basis of the version information of the drivers notified in updating by said receiving means and the version information of the 5 drivers incorporated.

Other features and advantages of the present invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which like reference characters designate 10 the same or similar parts throughout the figures thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a view for explaining the system 15 constitution of a network apparatus including a data processing apparatus according to the present invention.

Fig. 2 is a block diagram for explaining the 20 constitution of a data processing apparatus showing a first embodiment of the present invention.

Fig. 3 is a user interface view showing one example of a driver editing screen that can be displayed on CRT shown in Fig. 2.

Fig. 4 is a view showing one example of an 25 operating screen for performing installing indication that can be displayed by the data processing apparatus shown in Fig. 2.

Fig. 5 is a view for explaining the data construction of driver setting information controlled by the data processing apparatus shown in Fig. 2.

5 Fig. 6 is a view showing one example of a list of driver setting information that can be controlled by the data processing apparatus shown in Fig. 2.

Fig. 7 is a view showing one example of messages displayed on the data processing apparatus shown in Fig. 2.

10 Fig. 8 is a view showing one example of messages displayed on the data processing apparatus shown in Fig. 2.

15 Fig. 9 is a view showing one example of messages displayed on the data processing apparatus shown in Fig. 2.

Fig. 10 is a flowchart showing one example of a first data processing procedure in the data processing apparatus according to the present invention.

20 Fig. 11 is a view showing one example of a driver state confirmation setup screen in the data processing apparatus showing a second embodiment of the present invention.

25 Fig. 12 is a flowchart showing one example of a second data processing procedure in the data processing apparatus according to the present invention.

Fig. 13 is a view showing one example of a driver control editing screen in the data processing apparatus

showing a third embodiment of the present invention.

Fig. 14 is a view showing one example of a driver control editing screen in the data processing apparatus showing a third embodiment of the present invention.

5 Fig. 15 is a view showing one example of the construction of favorite display setting data to be displayed on a "Favorite display" window shown in Figs. 13 and 14.

10 Fig. 16 is a view showing one example of driver install messages displayed on CRT shown in Fig. 2.

Fig. 17 is a flowchart showing one example of a third data processing procedure in the data processing apparatus according to the present invention.

15 Fig. 18 is a view for explaining one example of a message window displayed on CRT shown in Fig. 2.

Fig. 19 is a view for explaining one example of a message window displayed on CRT shown in Fig. 2.

Fig. 20 is a view for explaining one example of a check result window displayed on CRT shown in Fig. 2.

20 Fig. 21 is a flowchart showing one example of a fourth data processing procedure in the data processing apparatus according to the present invention.

Fig. 22 is a view for explaining one example of a message window displayed on CRT shown in Fig. 2.

25 Fig. 23 is a flowchart showing one example of a fifth data processing procedure in the data processing apparatus according to the present invention.

Fig. 24 is a flowchart showing one example of a sixth data processing procedure in the data processing apparatus according to the present invention.

5 Fig. 25 is a view for explaining one example of a driver updating setup window displayed on CRT shown in Fig. 2.

10 Fig. 26 is a view for explaining a memory map of a storage medium for storing various data processing programs that can be read by the information processing apparatus according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

15 Fig. 1 is a view for explaining one example of the information processing system showing the present embodiment, showing the network constitution where network apparatuses are connected to a network.

20 In Fig. 1, reference numeral 102 designates a printer, which has an open type architecture, and is connected to the network through a network board (NB) 101. NB 101 is connected to a local area network (LAN) through local area network interfaces such as an Ethernet interface 10 Base-2 having a coaxial connector and 10 Base-T having RJ-45.

25 A plurality of personal computers (PC) such as PC 103, 104, 111, 112 are connected to LAN 100, and these PC 103, 104, 111, 112 can be communicated with NB 101 under the control of a network operating system.

Accordingly, one of PCs, for example, PC 103 can be used as a network device controlling PC (control server). Further, a printer 105 may be locally connected as a local printer to PC 104. A printer 18 and an image reading device 1B are locally connected to PC111.

5 Numerals 106 and 113 designate PC having a function as a file server, and are connected to LAN 100 to control the access to files stored in network disks 10 107 and 114 having a large capacity (a 100-billion byte).

PC104 also functions as PC which functions as a printer server to control printing of a printer 105 connected to local and a printer 102 located at a 15 remote place. Numeral 115 designates PC which functions as a scanner server to control a scanner 1117 connected to local and a scanner 110 located at a remote place. PC 115 which functions as a scanner server has a printer 116 connected to local.

20 The scanner 110 is connected to LAN 100 through a network board or the like not shown. Numeral 118 designates a copier, which provides function as a printer or a scanner under the control of an image processing unit 119.

25 In the network shown in Fig. 1, network soft wares such as Novell and UNIX can be used in order to perform communication efficiently between various network

members. For example, a NetWare (a registered trademark of Novell Ltd., hereinafter abbreviated) software of Novell Ltd. can be used. A detailed explanation in connection with this software package 5 is described in a on-line documentation contained in the NetWare package.

PC 103 and PC 104 are respectively general PC which can perform formation of a data file, transmission of the formed data file to LAN 100, 10 reception of a file from LAN 100, and display and /or processing of the file.

Fig. 1 shows a personal computer (PC) as one example of an information processing apparatus connected to a network, which however may be other 15 computers suitable for executing the network software. For example, where a software of UNIX is used, a UNIX work station may be connected to a network, and these work stations are used together with PC shown.

Normally, LAN 100 provide a service to a 20 relatively local user group, for example, a user group on one floor or a plurality of floors within one building. On the other hand, when users are separately located such that they are located in different buildings or different areas, a wide area network 25 (WAN) may be constructed. Basically, WAN is formed such that several LAN are connected by high speed digital lines such as a service synthetic digital

network (ISDN). LAN is an assembly.

For example, as shown in Fig. 1, LAN 100 and LAN 120 are connected to a back bone 140 whereby WAN is formed. Machines connected to LAN 120 can access to 5 the function of other machines connected to LAN through WAN connection. For example, PC 121, 122 connected to LAN 120 can be connected to various devices (peripheral devices) such as PC, a server, a printer, a scanner, a copier, etc. connected to LAN 100 through WAN 10 connection to receive and transfer various files and data.

Fig. 2 is a block diagram for explaining the client constitution showing the present embodiment, which is capable of directly communicating with fixed 15 peripheral devices (including a printer, a scanner, a modem, a composite image processor, etc.) through LAN such as Ethernet, and is capable of communicating, under fixed protocol, with other data processing apparatuses to which are connected in local peripheral 20 devices. The block diagram of the data processing apparatus will be described with reference to Fig. 2. It is noted that in the present embodiment, the information processing apparatus corresponds to PC 111. The same parts as those of Fig. 1 are indicated by the 25 same reference numerals.

In Fig. 2, numeral 1 designates a system bus, and constituent blocks described later are connected to the

system bus. Numeral 2 designates CPU (Central Processing Unit) which controls the constituent blocks connected to the system bus 1. Numeral 3 designates a program memory (PMEM) which suitably selects/reads programs for the present processing from a hard disk 10, which are executed by CPU 2.

Data input from the keyboard 12 are stored as code information in PMEM 3 which also serves as a text memory.

10 Numeral 4 designates a communication controller, which controls input/output data in a communication port 5. A signal output from the communication port 5 is transmitted to communication ports of other devices 7 (PC, servers, devices, etc. shown in Fig. 2)
15 connected to networks (such as LAN, WAN, etc.). The transmit-receiving of various data with respect to various devices such as an image read device are carried out through the communication controller 4. While in the present embodiment, a description is made
20 of the case where PC is connected to the network such as LAN, it is to be noted needless to say that even the communication port 5a and the communication circuit 6 connected to the communication controller 4 are general public circuits (such as a telephone circuit, an
25 internet circuit, etc.), the present invention is applied thereto.

Numeral 8 designates an external storage controller.

Numerals 9 and 10 designate a disk for data file, which store various data such as data file. Here, as one example, 9 is a floppy disk (FD), and 10 is a hard disk (HD).

5 Numeral 11 designates an input controller, to which are connected input devices such as a keyboard 12, mouse or a pointing device (PD) 13 and so on. An operator operates the keyboard 12 to thereby indicate operation of the system. The pointer device 13 is
10 provided to indicate processing of image information on CRT 16, in which a mouse is used in the present embodiment. Thereby, a cursor on CRT 16 is moved suitably in X and Y directions to select a command icon on a command menu to perform indication of processing,
15 and perform indication of editing object and indication of depicting position, etc.

Numeral 14 designates a video image memory (VRAM), and 15 designates a display output controller. Data displayed on CRT is developed as bit map data on VRAM
20 14.

Numeral 17 designates a printer controller, which controls output of data relative to a printer 18 connected. Numeral 1A designates a scanner controller, which controls a scanner 1B connected. Numeral 19
25 designates an external apparatus controller, which controls operation of an external apparatus through the printer controller 17 or the scanner controller 1A.

The constituent elements of the scanner controller 1A and the scanner 1B are essential to PC (image read server) 115 which functions as a scanner server connected to the network, but in client-side apparatuses, for example, PC 111, 112, 121, 122, etc., the constituent elements such as the scanner controller 1A and the scanner 1B owned jointly on the PC 115 side which functions as a scanner server through the communication controller 4 and the communication port 5, as mentioned previously.

It is noted that the constitution of PC shown in Fig. 2 has the similar constitution, even if the scanner controller and the scanner are physically separate components, or the scanner is one component 10 including the scanner controller.

In the present embodiment, the programs stored in HD10 may be stored in a storage medium such as FD9 connected directly to PC, or may be stored in ROM not shown. Further, they may be stored on other 15 apparatuses (such as PC) connected on the network. The programs of the present invention can be supplied to the system or apparatus through the storage media such as FD and HD, or the network.

The PC and servers shown in Fig. 1 are likewise 20 provided with the control constitution shown in Fig. 2, but the devices connected are different.

Fig. 3 is a view for explaining one example of a

device display window 300 displayed on CRT 16 shown in Fig. 2. The device display window 300 is displayed on CRT 16 of PC 111 in Step S202 of a flow chart shown in Fig. 10 and Step (3) of a flow chart shown in Fig. 21, described later.

In Fig. 3, numeral 300 designates a main window in a driver editing user interface, which displays a menu, a tool bar, and a system display window. Numeral 301 designates a tool bar, which displays icons 301a to 301f of functions performed by operating PC and devices connected to the network. Numeral 303 designates a menu bar, which displays menus of a main menu 303a, editing 303b, a display 303c, a device 303d, and a held 303e.

Numeral 302 designates a system display window, and a window for schematically displaying the information processing system shown in Fig. 1, which displays icons 302a to 302z representative of PC and devices connected to the network. For example, the icon 301c executes and indicates reading of image data from a scanner corresponding to the icon selected on the system display window 302.

The icons 302a to 302z indicate PC and devices owned jointly on the network. In these icons 302a to 302z, PC, a printer, a scanner, a FAX modem, a network printer such as a printer 102 shown in Fig. 1, a network scanner such as a scanner 110 shown in Fig. 1,

kinds of devices such as a copier, or display form of icon changed by status such as "processing" or "occurrence of error" are displayed on the system display window 302.

- 5 Numeral 302a designates a route icon, numeral 302b designates an icon representative of a domain in which my machine is turned log-on, and numeral 302c designates an icon representative to my machine, which corresponds to PC 111 shown in Fig. 1. My machine,
10 which is a special device, is displayed separately from other PC connected to the network. In Fig. 3, the information processing apparatus of my machine is connected to the same LAN as other PC, but is displayed on the end of a paragraph different from other PC.
15 As shown in Fig. 3, in the system display window 302, the devices (including an information processing apparatus, peripheral processing apparatuses) are divided into three ends of a paragraph; and my machine and peripheral devices connected in local to my machine
20 are displayed in the uppermost end of a paragraph, and other devices are displayed in the second, third ... ends of a paragraph. PC and devices, which are owned jointly on the network as in icons 302m and 302p but in which no driver is installed on my machine, are
25 displayed in gray in display shape of icon.

Further, the display form of icon 302d shows that the scanner is now scanning. In the display form of

icon 302n, specific mark information showing that three
jobs ((3) in the figure) are spooled in this printer is
displayed near the printer icon 302n. In the display
form of icon 302z, specific mark information (x in the
5 figure) showing that a driver of a device shown by icon
30n is installed in my machine but is in a unusable
state for some reason is displayed so to be superposed
on the icon.

As described above, the connecting state and
10 status of all PC and devices on the network can be
assured by the device display window 300. While in the
device display window 300 shown in Fig. 3, all the
icons showing PC and device on the network are not
displayed for convenience' sake of screen, the status
15 of all PC an devices can be assured using a scroll bar
304 arranged on the side of screen.

While in the present embodiment, all devices on
the network are devices under a domain 302b in which
may machine 302c is logged in, they are not limited
20 thereto but may be devices included in an IP address
controlled by a router 302a.

Fig. 4 is a view for explaining one example of an
operating method on the device display window 300
displayed on CRT 16 shown in Fig. 2. Here, an
25 operating method where a version of a driver of a
device is checked to indicate updating will be
explained as an example.

In Fig. 4, numerals 501 to 503 designate a pull down menu, in which a device 303d is displayed when the former is selected by a pointing device 13 such as an electronic pen having a function of a mouse or a
5 digitizer. The present application is executed by selecting the device 303d of the menu 303 of the device display window, and performing one operation such as one click of "update driver" within the pull down menus 501 to 503 by a pointing device 13.

10 In Fig. 4, where in a state that an icon 302q showing a printer within the system display window 302 shown in Fig. 3 is selected by the pointing device 13, the pull down menu "update driver" 503 is executed by one operating indication such as one click of the
15 pointing device 13, the version of a driver of a printer shown by the icon 302q is checked to perform updating process of the driver.

Further, where a domain icon 302b is selected to perform similar operation, versions of drivers of all
20 devices within the domain installed on PC of my machine are checked to perform updating process of the driver. Where the versions of all drivers are checked, checking process of the versions of the drivers of all devices can be performed by one operation, while it takes
25 processing time for transmitting and receiving many data on the network, and load is given to the traffic of the network.

Where the version of the driver of the device selected is checked, since the checking process of version can be done only with respect to necessary device, processing time is short, and much load is not given to the traffic of the network. However, it is necessary for a user to check if which version of a driver out of all drivers is updated.

Where in a state that an icon 302p showing a printer within the system display window 302 shown in Fig. 3 is selected by the pointing device 13, the pull down menu "install driver" 501 is executed by one operating indication such as one click of the pointing device 13, driver information of a printer shown by the icon 302p is down loaded from a control server shown by the domain icon 302b, and the printer driver is automatically installed within my machine on the basis of the down-loaded driver information. In the present embodiment, the driver information is a driver installer, which is a soft ware program which is automatically executed upon completion of down-load to install the corresponding device driver. The control server shown by the domain 302b holds the driver setting information (installer) of all devices thereunder. The driver information may not be the driver installer, but it is possible to down-load the module constituting the printer driver in my machine, copy the downloaded module in OS of my machine, rewrite

a registry, and perform installing. In this case, the present information control program itself has an automatic install function of a driver so that the driver information downloaded from the control server
5 can be installed on my machine. The automatic install function is not only the installation of a driver module, but is processing for automatically setting an IP address or a port to a usable environment without being done by a user. The present control program is
10 to simultaneously receive an IP address or a port number as driver setting information from the control server.

Fig. 5 is a view for explaining one example of the data construction of driver setting information of various devices such as he device on the network stored
15 in PMEM 3, HD 10, etc. of the control server 103 shown in Fig. 1.

In Fig. 5, numeral 41 designates a header section, which has an area 41a for storing registered number of
20 driver setting information controlled by the control server 103 (No. of data), and an area 41b for storing comments.

Numeral 42 designates a data section. Numeral 42a designates an area for storing name of a driver
25 registered. Numeral 42b designates an area for storing version information of a driver registered. Numeral 42c designates an area for storing OS information to

which driver registered corresponds. OS information include Windows 95/98, Windows NT3.51, WINDOWS 4.0, WINDOWS 2000, MS-DOS, Macintosh (further, USB connection, serial connection, Ethernet connection), 5 UNIX (goods name), etc. Numeral 42d designates an area for storing driver setting information. Numeral 42c designates an area for storing comments.

Likewise, stored in the data section 42 are data comprising one set of names of drivers in number 10 registered stored in the area 41a, version information, corresponding OS information, and comments.

The driver setting information herein is information data acquired by installing drivers of devices in PC connected to the network, extracting data 15 and information necessary for installing the drivers of the devices, and preparing other driver information such as version information.

Where the control server 103 for controlling driver setting information in one-dimensional manner is 20 not present, devices are connected. Or, driver setting information is controlled by PC which controls the devices.

Fig. 6 is a view showing one example of a list of driver setting information capable of being displayed 25 by the information processing apparatus shown in Fig. 2. In the user interface screen of Fig. 6, where in a display state that any device icon is not selected in

my machine 302c, "Install driver" 501 in Fig. 4 is indicated in execution, driver information is acquired from the control server, and that is displayed on the basis of the acquired driver information.

5 In Fig. 6, numeral 901 designates a main window, and numeral 902 designates a list, displaying a driver name, a corresponding OS, and a version number.

Numeral 903 designates a button for switching setting information, which is selected where setting 10 information of default prepared in advance in the system within my machine is used. When this button 903 is selected, the function is switched to the driver install function of OS to shift to the normal setup process. Numeral 904 designates an install executing 15 button. When this button 904 is selected, the installation of a driver is executed on the basis of the driver setting information selected from the list 902.

Numeral 905 designates a cancel button, and when 20 this button is selected, installing of a driver is stopped.

Figs. 7 to 9 are respectively views showing one example of a message dialogue displayed on CRT 16 of the information processing apparatus shown in Fig. 2. 25 Fig. 7 shows a dialogue displayed when a driver is extracted form a control server described, Fig. 8 is a dialogue displayed during installation of driver by the

information processing apparatus of my machine, and Fig. 9 shows a dialogue displayed as an error where driver setting information is not present in the control server.

5 Fig. 10 is a flow chart showing one example of a first data processing procedure in the information processing apparatus according to the present invention, corresponding to a driver install processing procedure relative to peripheral devices on the
10 network. S201 to S214 denote the Steps. The present processing is executed where the device display window shown in Fig. 3 is opened, or where "Update to latest information" within the display 303 of the menu bar 303 is indicated.

15 First, in Step S201, CPU 2 of my machine, the information processing apparatus requests the control server 103 to acquire connection information of all PCs and peripheral devices owned jointly on the network and information o using circumstances and status of these
20 devices through the communication controller 4 to acquire the using circumstances and status information of devices form the control server 103. These information are stored on PMEM 3. The control server 103 is the domain server 302b shown in Fig. 3 in the
25 present embodiment, my machine 302c acquires information from the control server 302c using the fixed procedure for communication between devices

supported by WINDOWSNT.

Next, in Step S202, CPU 2 forms PCs and peripheral devices into a source of a user interface screen as shown in Fig. 3 in accordance with the present control 5 program, on the basis of information acquired from the control server 302b to display it on CRT 16 using the function of OS. Those which are operating or those which cannot be used are displayed so that they can be visually distinguished, as described above.

10 Then, in Step S203, CPU 2 judges whether or not the driver of the local device is installed. This can be accomplished by CPU 2 which judges whether or not, in the system display window 302 of Fig. 3, the device (in Fig. 3, either 302d or 302c) under my machine 302
15 is selected by the pointing device, and "Install driver" 501 in the pull down menu shown in Fig. 4 is selected and executed. Where a judgment is made that indication of installing a driver of a local device is not done, the Step proceeds to Step S209, and where a
20 judgment is made that indication of installing a driver of a local device is done, the Step proceeds to Step S204.

In Step S204, the present information processing apparatus acquires a list of driver setting information 25 from the control server 103 of Fig. 1, produces the user interface screen for setting up shown in Fig. 6, and displays it on CRT16 using function of OS. Where

the control server is not present, the apparatus gives
all PCs on the network a request in a broadcast to
acquire driver setting information controlled by PC
(information processing apparatus) or the peripheral
5 device (101 in Fig. 1) having a server function
directly connected to the network, and likewise
prepares and displays a list. Here, the driver setting
information is information such as a set file (DLL
file), a driver file, etc. necessary for installing a
10 device driver. This may be a file in the execution
form like the driver installer as mentioned previously.

Next, in Step S205, CPU 2 judges whether or not
the driver setting information is in a list. Where a
judgment is made that the driver setting information is
15 in a list, the Step proceeds to Step s206. In the
judgment in Step S205, CPU 2 may judge automatically,
or whether or not an install execution 904 button is
selected by a user, or a Windows data using 903 button
is selected, whereby CPU 2 may judge it.

20 In Step S206, driver setting information is
acquired from PC (for example, 302g or 302i in Fig. 3)
which controls the control server 103 or selected
peripheral devices to automatically install the driver.
At that time, when a driver is being installed, a
25 message relating to the install processing shown in
Fig. 8 is displayed on CRT16. In this automatic
installation, installation of a driver module is

automatically carried out, and setting of an IP address, a port number and so on are also automatically carried out.

On the other hand, where in Step S205, a judgment
5 is made that driver setting information that should be installed in a list by CPU 2 is not present, or where in the user interface screen of Fig. 6, a user selects Windows data using 903 button, the Step proceeds to Step S207, where routine process for installing a
10 driver prepared by the system is carried out. In Step S208, CPU 2 extracts driver information installed from the system of my machine, prepares driver setting information as shown in Fig. 5, and transmits driver setting information to the control server 103 in order
15 to register the prepared driver setting information in the control server 103. At that time, a message relating to the driver extraction shown in Fig. 7 is displayed. Where the control server is not present, driver setting information is controlled by my machine.

20 Next, in Step S209, CPU 2 judges whether or not a driver of a network device is installed. This is realized by CPU 2 which judges whether or not, in the system display window 302 of Fig. 3, a device (in Fig. 3, either 302m or 302n) under other information
25 processing apparatus 302 is selected by a pointing device, and "Install a driver" 501 in the pull down menu shown in Fig. 4 is selected. Also where in the

system display window 302 in Fig. 3, a domain icon 302b
is selected by a pointing device, and "Install a
driver" 501 is selected and executed, a judgment is
made as indication for installing a driver of a network
5 device. Where indication for installing a driver of a
network device (as an indication method, for example,
in Fig. 4, a printer 302p in which a driver is not
installed is indicated by a mouse) is done, the Step
proceeds to Step S210.

10 In Step S210, CPU 2 of my machine inquires the
control server 103 whether or not driver setting
information of the peripheral device selected is
present, and where the control server responded "not
present", CPU 2 of my machine further inquires whether
15 or not driver setting information is present in PC for
controlling the peripheral device selected, to judge
whether or not driver setting information is present in
the control server 103 or PC for controlling peripheral
devices. In the case of indication of installation in
20 a state that a domain icon 302b is selected,
installation of drivers of all peripheral devices under
control of the control server 103 corresponding to the
domain icon is indicated, and since the driver of the
peripheral device under control of he control server
25 103 holds driver setting information in the control
server 103, a judgment is made that driver setting
information is present in the control server.

Where judgment is made that driver setting information is present, the Step proceeds to Step 211, where driver setting information is acquired form the control server or PC for controlling the peripheral device selected, and processing similar to the local device is carried out to install a driver. At that time, a message shown in Fig. 8 is displayed during installation of a driver.

On the other hand, where my machine judges that driver setting information is not present in either the control server 103 or PC for controlling the peripheral device, the Step proceeds to Step S212, where the fact that necessary driver setting information is not present is displayed, by a message, as shown in Fig. 9.

In Step S213, routine driver installing processing prepared by the system is carried out. That is, installation of a driver is manually carried out by a user using the function of OS. Driver setting information used is one down-loaded by indication of a user from CD-ROM or a home page of sales company. In Step S214, CPU 2 of my machine performs extraction of driver information installed, prepares driver setting information as shown in Fig. 5, and registers the prepared driver setting information in the control server. Where the control server is not present, driver setting information is transmitted to the control server 103 in order to register driver setting

information in PC for controlling the selected peripheral device. A message shown in Fig. 7 is displayed during extraction of driver information. Then, processing is terminated.

5 As described above, according to the first data processing procedure, where in PC owned jointly on the network and the window on which peripheral devices are displayed, a driver is not installed when these devices are used, the driver can be installed in a simple
10 operation to improve work efficiency.

While in the above-described first embodiment, a judgment is made whether or not a driver is installed within application to extract necessary driver setting information, a user sometimes executes processing for
15 installing a driver other than the present application. In this case, necessary driver setting information is not extracted. So, means is provided to monitor if a driver is newly installed so that necessary driver setting information is extracted. This embodiment will
20 be explained hereinafter.

Fig. 11 is a view showing one example of a driver state confirmation setup screen in the information processing apparatus according to the present invention. The hard construction is similar to that
25 shown in Fig. 1.

In the figure, numeral 1101 designates a main window; 1102 confirming time intervals; 1103 a setup

execution button; and 1104 a cancel button.

CPU 2 confirms a state of a driver of a local device set to my machine on the basis of the present second data processing procedure every time set in this
5 screen.

There is a case where if the installing process prepared by the system was executed to install a driver, means for notifying each application that a driver was installed is prepared on the system side.

10 In this case, it is possible to detect that a driver was newly installed by monitoring such a notice as described.

Fig. 12 is a flow chart showing one example of the second data processing procedure in the information processing apparatus according to the present
15 invention. S1001 to S1005 indicate the Steps. The present processing is executed where the device display window shown in Fig. 3 is opened, or where "Update to latest information" within the display 303c of the menu
20 bar 303 is indicated.

First, in Step S1001, CPU 2 of my machine inquires the control server 103 or PC for controlling peripheral devices about connecting information of all PCs owned jointly on the network through the communication
25 controller 4, using state and status information of these devices to acquire the using circumstances and status information. Those information are stored in

PMEM3.

Then, in Step S1002, CPU 2 of my machine produces a source of a user interface screen as shown in Fig. 2 in PC and peripheral devices on the basis of the 5 acquired information to display it on the screen using function of OS. Those being operated and those that cannot be used are displayed so that they may be visually discriminated.

Next, in Step S1003, CPU 2 of my machine judges 10 whether or not a device connected in local to my machine is newly installed, or a driver of latest version is installed. As a method for judgment, for example, updating state of a driver is judged at fixed time intervals set on the set screen shown in Fig. 11.

15 Where the fact that a driver is newly installed or a version of a driver becomes new is judged by CPU 2, the Step proceeds to Step S1004, where CPU 2 extracts driver setting information installed newly on my machine, and transmits driver setting information to 20 the control server 103 in order to prepare driver setting information as shown in Fig. 5 to register it in the control server. Where the control server is not present, it is controlled by my machine.

On the other hand, where in Step S1003, judgment 25 is made that a driver is not newly installed or a version of a driver is not changed, judgment is made in Step S1005 whether or not application (device display

window shown in Fig. 3) is ended, and where judgment is made to be an end, the application is ended, while where judgment is made not to be an end, the Step returns to Step S1003 to continue processing.

5 As described above, in the above-described embodiment, connecting information and status information of the peripheral devices on the network are acquired, and the circumstances of the constitution of the current system and the peripheral devices
10 constituting the system were discriminated and display visually on the same screen by the icon on the display device of my machine. The description has been made of the case where when the drivers of the peripheral devices owned jointly by the network are connected to
15 the control server or connected in local, driver setting information necessary for setting up the drivers are acquired from PC to install them on a device manager or the like of my machine, and the peripheral devices are set up to a state capable of
20 being normally operated.

However, when the connecting information of all PCs owned jointly on the network and the peripheral devices is displayed on one screen, discrimination between that is selected by a user for use and that is
25 not selected is impaired, which cannot softly respond to a user's request for discrimination between the favorite peripheral devices and others, and which

requires operation for selecting drivers as intended when a driver of a device is installed, and it is therefore contemplated that installing operation is cumbersome for an inexperienced user.

5 So, there can be constituted such that a favorite display and a routine display are displayed on divided screens, and icons displayed on the respective screens are dragged and dropped whereby if unregistered, the favorite screen is displayed and at the same time,
10 driver information is acquired from a control server or PC connected in local to automatically install it or said driver for dragging and dropping the icon already displayed on the favorite to the routine display screen can be automatically deleted; and constituted such that
15 installing/uninstalling of a driver is carried out simply for the user first, and the driver environment of devices owned jointly on the present network capable of being operated can be recognized easily. This embodiment will be described below.

20 Figs. 13 and 14 are respectively views showing an example of a driver control editing screen in the information processing apparatus according to the present invention. In the present embodiment, the display method includes two kinds, a "routine display" for displaying all PCs or peripheral devices on the network and a "favorite display" for displaying only PCs or peripheral devices registered. In the
25

following, information data for displaying only a specific device out of PCs or peripheral devices on the network is referred to as "favorite display setting data".

5 In Figs. 13 and 14, numeral 3301 designates a main window on which a menu, a tool bar, and an icon representative of PC and peripheral devices are displayed.

Icons 3301a to 3301c are editing icons in which
10 displaying and editing of favorite are done by the tool bar.

"Open" icon 3301a is an icon for reading "Favorite display setting data" registered already in my machine. By executing it, the "Favorite display setting data" 15 registered is read, and the favorite device or peripheral device is displayed on the "Favorite display" window shown at 3302.

"Storage" icon 3301b is a button for changing a device position in the "Favorite display" window 3302, 20 newly registering the favorite device from the "Routine display" window 3303, and, where the favorite device in the "Favorite display" window is deleted or updated, for storing the content of change in "Favorite display setting data".

25 "End" icon 3301c is provided to end (terminate) change of "Favorite display setting data". When the "End" icon is selected, the "Favorite display" window

3302 is erased.

In the main window 3301, numeral 3302 designates "Favorite display" window, which corresponds to a state that PC and peripheral device registered in "Favorite display setting data" are displayed. Numerals 3302a to 3302g designate icons, which correspond to PC and peripheral device registered in "Favorite display" window 3302. Within the "Favorite display" window 3302, a position of a device can be arranged by being 5 dragged to a favorite position about "My machine" 3302a 10 which is my machine.

Numeral 3303 designates "Routine display" window, which corresponds to a state that all PCs and peripheral devices on the network under control of a 15 control server (domain server) 103 shown at domain 3303b or within he same router shown by a route icon 3303a.

As described above, these icons 3302a to 3302g are displayed where the display form of icons is changed by 20 the status of a printer, a scanner, kind of devices such as FAX modem, or "processing", or "error occurs".

In the "Favorite display" window 3302, numeral 3302a designates an icon representative of my machine, and my machine is displayed separately from other PCs 25 because the former is a special device.

Numerals 3302b to 3302g designate icons, which display PCs or peripheral devices registered in the

favorite display. In default, a screen display arranged on a circle about the icon 3302a for easy operation is done.

5 A position of an icon can be freely changed by a user by operating a mouse as the pointing device 13 shown in Fig. 2.

In the routine display window 3303, numerals 3303a to 3303x designate icons, which indicate all PCs and peripheral devices on the network. While in the 10 present embodiment, all icons are not displayed for the sake of convenience of the screen, all PCs and peripheral devices can be confirmed using a scroll bar SB arranged on the side of the screen.

The PCs and peripheral devices already registered 15 in the favorite display as in the icons 3303c, 3303i and 3303l are displayed with the display shape of icons changed, and registration can be visually discriminated and confirmed.

A device which is owned jointly on the network as 20 in the icon 3303w but a printer driver is not installed on my machine in PC is displayed in gray (shown by diagonal lines in the figure).

As described above, if a user looks at the device 25 editing display screen shown in Figs. 13 and 14 (which is displayed by down-loading from the home page of sales company through FD or CD-ROM shown in Fig. 1 or the communication line, installing an application

program described later and starting the application),
the connecting state and status of all PCs and
peripheral devices on the network can be confirmed.

5 Fig. 15 is a view showing one example of the
construction of "Favorite display setting data" to be
displayed on the "favorite display" window 3302 shown
in Figs. 13 and 14, comprising a header section 16 and
a data section 62.

10 In the header section 61, numeral 61a designates a
machine name which prepared data. The machine name
will suffice if a device can be decided uniformly, and
may be a machine appellation or may be IP address of
TCP/IP protocol.

15 Numeral 61b designates an appellation of a
prepared person. This appellation may be an
appellation which is logged on the machine, or may be
other appellations. Numeral 61c designates a date
prepared. Numeral 61d designates data number, and
number of PC or peripheral devices registered is set.
20 Numeral 61e designates a comment.

25 In the data section 62, numeral 62a designates an
appellation of devices registered, and 62b designate
attribute data. The attribute data represents kinds of
devices or the like, such as PC, a printer, a scanner,
a FAX modem and so on.

Numeral 62c designates status information, which
include information such as "Using", "Paper run out",

"Driver not installed", etc. Numeral 61d designates display position information, which is information for showing a display position in the "Favorite display" window 3302 of the icon corresponding to the device.

5 Numeral 62c designates a comment suitably prepared by a user.

Likewise, only the number of registrations (for example, 1 to N) stored in the data number 61d of the data section 62 are stored.

10 Fig. 16 is a view showing one example of a driver install message displayed on CRT 16 shown in Fig. 2, which is displayed where driver setting information is not present. Display timing will be described in detail in a flow chart shown in Fig. 17.

15 Fig. 17 is a flow chart showing one example of a third data processing procedure in the information processing apparatus according to the present invention. S2201 to S2212 indicate the Steps. The construction of data acquired from the control server 20 103 or the like is similar to Fig. 5 in the first embodiment. The present processing is executed where the device display window shown in Figs. 3 and 13 is opened, or where indication of "Update to latest information" within the display 303c of the menu bar 25 303 in Fig. 3 (as well as Fig. 13) is made.

First, in Step S2201, when the application for editing the favorite display is started, CPU 2 of my

machine requests the control server 103 the connecting information of all PCs owned jointly on the network and peripheral devices, the using circumstances of these devices, an status information, and acquires the using 5 circumstances of devices and status information from the control server 103. CPU 2 then stores these information on PMEM3 shown in Fig. 2.

Next, in Step S2202, CPU 2 acquires favorite display information stored in a memory (PMEM3 or 10 external devices 9, 10) of my machine. In Step S2203, CPU 2 produces a source of a user interface screen showing the routine display window 3303 and the favorite display window 3302 on the basis of information acquired in Step S2201 and registration 15 information acquired in Step S2202 to display the favorite display window 3302 and the routine display window 3303 on one and the same screen (see Figs. 13 and 14) using function of OS.

Next, in Step S2204, CPU 2 performs registration 20 of PCs and peripheral devices in the favorite display setup. As the registration operating method, for example, the icons of devices are dragged and dropped from the routine display window 3303 to the favorite display window 3302 by operating a mouse or the 25 pointing device 13 shown in Fig. 2, whereby the icon can be registered at a position from which mouse is released.

Conversely, the favorite display registration can be deleted by dragging and dropping the icon from the favorite display window 3302 to the routine display window 3303.

5 In this registration processing, in Step S2205, the status of a device to be registered is examined to judge if the driver need be installed. Where an icon which is not installed to be usable for the information processing apparatus of my machine is dragged and
10 dropped from the routine display window 3303 to the favorite display window 3302, judgment is made that the driver need be installed.

There are some methods for judging whether or not information for setting a driver of the designated
15 device. For example, there is contemplated a case where a control server for controlling setting information of drivers in one-dimensional manner is present. In this case, information of a device for installing a driver on the control server is
20 transmitted to thereby judge if necessary setting information is present. Items for judgment include kinds of drivers, corresponding OS information and the like.

Where judgment is made that driver need not be
25 set, the Step proceeds to Step S2205, and where judgment is made that driver need be set, the Step proceeds to Step S2206. In Step S2206, judgment is

made of presence or absence of setting information of driver by the above-described method, and if judgment is made that setting information is present, the Step proceeds to Step 2207. In Step S2207, CPU 2 transmits
5 a request for acquiring necessary driver setting information to the control server or PC for controlling the designated device, acquires driver setting information from the control server 103 or PC according to the request for acquiring, and installs a driver in
10 my machine on the basis of the driver setting information acquired.

At that time, a message showing "install-processing" is displayed as shown in Fig. 8. However, when "cancel" is indicated on the screen shown in Fig.
15 8, the install-processing can be stopped.

On the other hand, in Step S2206, where judgment is made that setting information is not present, the Step proceeds to Step S2112 to show the content that the driver cannot be installed because setting
20 information is not present. For example, an error message as shown in Fig. 16 is reduced, which is displayed on CRT 16 using function of OS.

Next, in Step S2208, device information of devices registered in the favorite display window 3302 and
25 positions thereof in the favorite display window 3302 are calculated, the designated devices are registered in the favorite display setting data, and the changed

setting data is stored as temporary storage data. In Step S2209, the favorite display window and the routine display window are changed in display on the basis of the temporary storage data.

5 Thereby, where an icon 3303w of a printer shown in Fig. 13 is dragged and dropped in a suitable point of the favorite display window, and the driver is normally installed, the display is switched to that shown in Fig. 14.

10 That is, the icon 3303w of a printer is normally displayed as in an icon 3302h within the favorite window 3302 since the driver is normally installed.

Further, since in the routine display window 3303, the favorite display is registered as in the icon 3303w, the display form is changed to the registered icon display by the present application.

15 Next, in Step S2210, judgment is done if indication of finishing the favorite display editing was made. If judgment is made that indication of termination is not present, the Step returns to Step S2204, and the favorite display editing is continued.

On the other hand, in a case where it is judged in Step S2210 that the indication of termination is present, the step proceeds to Step 2212, and the temporarily stored favorite display setting data is formally stored to finish the processing.

According to the above-described embodiment, in

editing the favorite display setup on the editing screen in which the window for displaying all owned jointly on the network with respect to PCs and peripheral devices and the window for displaying only those registered are displayed to be seen easily and to be understood easily, they can be registered in a simple operation irrespective of status of devices registered to thereby improve the work efficiency.

As described above, according to the present embodiment, the operating state of the entire system including various common peripheral devices connected on the network and other data processing devices and the respective operating state can be visually discriminated and confirmed on the screen.

Next, a description will be made of a processing for checking updating of drivers of all devices of a plurality of devices connected to the network.

Fig. 21 is a flow chart for explaining one example of a fourth data processing procedure in the information processing apparatus shown in the present embodiment, which corresponds to the processing executed by PC on the network such as PC 111 shown in Fig. 2, corresponding to the processing executed by CPU 2 according to the control program stored in the memory such as HD 10 shown in Fig. 2. (1) to (12) denotes the steps. In the following, as one example, PC 111 is used as my machine. The present processing is executed

where the device display window shown in Figs. 3 and 13
is opened.

First, CPU 2 of the information processing
apparatus acquires the connecting information of all
5 PCs and devices owned jointly on the network, the using
circumstances of these devices, and the status
information thereof from the control server 103 to
store these information in PMEM 3 (1). Then, CPU 2
checks driver setting information of devices installed
10 on my machine to acquire the driver setting information
(2).

The aforementioned device display window 300 shown
in Fig. 3 is displayed on CRT 16 of my machine on the
basis of the circumstances and information acquired in
15 Steps (1) and (2) to display all PCs and devices on the
network under the control of a domain server 302b (3).
Even if the devices to be displayed are all devices
within IP address controlled by a router 302a,
acquiring of information and display are enabled, as in
20 the aforementioned data processing procedure.

Next, CPU 2 judges whether or not an indication
for checking driver's versions of all devices is made,
by the menu operation of "Update driver" on the device
display window 300 shown in Fig. 4 (4). Here, where a
25 "Update driver" button 503 is selected and executed in
the state that the domain server 302b is selected by a
pointer device, the driver's versions corresponding to

all devices are to be checked; where the "Update driver" button 503 is selected and executed in the state that a "My machine" 302c or my machine is selected by a pointing device, a version of a driver
5 installed on my machine is to be checked; where the "Update driver" button 503 is selected and executed in the state that PC for controlling devices such as 302g and 302i, or PC connected in local is selected by a pointing device, a version of a driver corresponding to
10 the device controlled by PC or the device connected in local to PC is to be checked; and where the "Update driver" button 503 is selected and executed in the state that the peripheral device itself is selected by a pointing device, a version of a driver corresponding
15 to the selected peripheral device is to be checked.

In a case where an indication is made to check versions of all drivers, CPU 2 of my machine acquires version information of drivers of all devices controlled by the control server 103 from the control
20 server 103 (domain server 302b or router 302a) (5).
The Step proceeds to Step (7).

Where an indication is not made to check a version of a driver of the selected device (a driver installed on my machine, or a driver of a device controlled by PC
25 owned jointly, or a driver of the selected peripheral device), CPU 2 acquires version information of the driver of the selected device from the control server

103 (6). The Step proceeds to Step (7). Where the control server 103 is not present, version information of drivers are acquired from PC for controlling the devices. Alternatively, in Steps (5) and (6), driver 5 setting information together with version information may be acquired.

Then, CPU 2 of my machine compares version information acquired from the control server 103 with version information of a driver of a device installed 10 on my machine, and displays a message window 701 shown in Fig. 18 on CRT 16 shown in Fig. 2 of my machine (7).

Next, CPU 2 of my machine judges whether or not the driver of the device installed on my machine need be updated (8). This judgment is accomplished by 15 judging whether or not it is object driver setting information by a driver name and corresponding OS, and if it is the corresponding driver setting information, comparing version numbers. Where version information of the driver acquired from the control server 103 is new as compared with the version of the driver of the 20 device installed, judgment is made that the driver need be updated.

In a case where a device whose driver need be updated is not present, a message window 801 shown in 25 Fig. 19 showing that updating is not necessary is displayed on CRT 16 shown in Fig. 1 (9), and processing is finished.

In a case where the device whose driver need be updated is present, a check result window 901 shown in Fig. 20 representative of a list of devices which need be updated is displayed (10). CPU 2 of my machine
5 judges whether or not an updating execution button 2003 in Fig. 20 is indicated in execution by one operating indication such as one click by a pointing device, whereby whether or not an indication for updating a driver is present is judged (11).

10 Where updating indication is not present, processing is finished, and where updating indication is present, a driver of the device selected on the check result window 2002 shown in Fig. 20 is updated, and a source of a user interface screen of a message
15 window 2201 shown in Fig. 22 is produced and displayed on CRT 16 using function of OS (12). When updating processing is finished, all processing are finished.

The updating method of the driver of the device in Step (12) is carried out on the basis of device setting
20 information acquired from the control server 103 or C for controlling the device for updating the driver. The driver setting information 42d of the device setting information shown in Fig. 5 is a DLL file required for installation of a driver, or a driver
25 installer module in the form of execution, as mentioned above. Installing processing of a driver is carried out by executing the installer, or copying the DLL file

in the system to update a registry, and the version of the driver is automatically updated. In the automatic updating processing, setting of IP address and port numbers set on the driver installed already is
5 automatically done continuously.

The aforementioned Fig. 18 is a view for explaining one example of a message window 601 displayed on CRT 16 shown in Fig. 2. The message window 601 is displayed on CRT 16 when processing of
10 (5) to (7) in the flow chart shown in Fig. 21 is executed.

In Fig. 19, numeral 1901a denotes a OK button, which is selected by a pointing device 13 to thereby to shift to next processing from the Step (9) in the flow
15 chart shown in Fig. 21.

Fig. 20 is a view for explaining one example of a check result window 2001 displayed on CRT 16 shown in Fig. 2. The check result window 2001 is displayed on CRT 16 in Step (10) of the flow chart shown in Fig. 21,
20 and is a window for displaying a list of devices of which drivers need be updated as a result of comparison of version information.

In Fig. 20, numeral 2001 designates a check result window. Numeral 2002 designates a list window, which
25 display in a list, appellations of devices of which drivers need be updated, driver names, and version numbers updated. An operator can select one or a

plurality of devices displayed within the list window 2002 by operating a pointing device 13 or a keyboard 12.

Numeral 2003 designates an updating execution button. When the updating execution button 2003 is selected, updating processing of the driver of the device selected by the list window 2002 is executed. Numeral 2004 designates a cancel button. When the cancel button 2004 is selected, updating processing of the driver is stopped.

Fig. 22 is a view for explaining one example of a message window 2201 displayed on CRT 16 shown in Fig. 2. The message window 2201 is displayed on CRT 16 during updating of a driver in Step (12) in the flow chart shown in Fig. 21.

In Fig. 22, numeral 2201 designates a message window. Numeral 2201a designates a OK button. This OK button is selected to thereby shift to the next processing from Step (12) in the flow chart shown in Fig. 21.

As described above, the information processing apparatus shown in the present embodiment is provided with a communication controller 4 for receiving and transmitting information data between PCs connected to the network (LAN, WAN). CPU 2 reads information of PC on the network and connecting information of peripheral devices such as a printer and a scanner connected

thereto in accordance with the processing procedure of
the flow chart shown in Fig. 2 through the
communication controller 4, reads status information of
PCs and the peripheral devices connected on the basis
of the read information, and stores the read
information in PMEM 3.

The connecting setup and using circumstances of
all PCs and peripheral devices connected on the network
are displayed with the device display window 300 on CRT
16 on the basis of the read information, and CPU 2
acquires versions of drivers of peripheral devices
installed on my machine, and acquires driver setting
information and version information registered in the
control server 103 for devices for checking version
information selected on the device display window 300
by an operator or PC for controlling devices.

The acquired version information are compared, the
compared result is displayed as the message window 801
and he check result window 901 on CRT 16, and the
driver updating indicated by an operator in the check
result window 901 for indicating devices of which
drivers are updated is updated on the basis of driver
setting information acquired from the control server.

Thus, version information of drivers of peripheral
devices owned jointly on the network is checked, and if
the driver need be updated, the driver can be updated
in a simple operation, thus enabling improvement in

work efficiency.

The above-described fourth data processing procedure has been explained of the case where version information of the driver installed on my machine is compared withy version information of the driver stored in the control server, and if the driver need be updated, the driver is updated.

Since the fourth data processing procedure is constituted so that whether or not the driver of the device is updated within the application executed by PC is judged to update necessary driver, the driver is not updated unless an operator consciously indicates execution of the application.

In the present fifth data processing procedure, a description is made of the case where there are provided means for comparing, when a driver is updated by one of a plurality of PCs owning jointly devices on the network, driver setting information controlled by the control server 103 with the version of the driver installed, means for preparing driver setting information updated on the PC to register it in the control server 103, means for notifying other PC on the network that the driver of the device is updated, means for receiving a notice of updating of the driver from other PCs, means for judging whether or not the driver of the device notified is installed, and means for updating the driver in accordance with the notice of

updating, whereby the drivers of the same version can be installed by all PCs on the network owning jointly the devices.

5 Also in the present data processing procedure, a description is made using as one example the information processing system shown in Fig. 1 in which a plurality of PCs provided with the control constitution shown in Fig. 2, a server and various devices are connected to the network.

10 In the following, a description is made, with reference to a flow chart of Fig. 23, a processing procedure of PC for updating a driver on the network and a processing procedure where a driver is updated in PC 111 shown in Fig. 1, for example.

15 Fig. 23 is a flow chart for explaining one example of the fifth data processing procedure in the information processing apparatus shown in the present embodiment, which is a processing executed by PC 111 shown in Fig. 1, corresponding to a processing executed 20 by CPU 2 in accordance with a control program stored in a memory such as HD 10 shown in Fig. 2. (1) to (5) designate the Steps.

First, CPU 2 of my machine acquires version information from a driver installed for controlling a printer 18 and an image read device (scanner) connected in local to my machine (1), and checks (compares) 25 whether or not which one of a driver to be updated or a

driver installed already is new (2). Where version of the driver to be updated is old as a result thereof, processing is finished, while where version of the driver to be updated is new, updating processing of the 5 driver takes place (3).

Next, CPU 2 of my machine extracts device setting information necessary for installing the drive of the updated device from a file of a driver installed, to deliver it to the control server 103 through the 10 network and register it in the control server 103. Then, CPU 2 of my machine notifies other PCs 104, 112, 115, 121, and 122 on the network that the driver of the device was updated (5) to finish processing. This notice is accomplished such that the present 15 application indicates IP addresses of other PCs on the network and indicates a port used in the present application. The port number is a number zone that can be freely used by OS, and for example, where ten thousands (10000) number is used freely, the port number is registered in advance in 10550 number as a 20 port of the present application in a registry of OS for use.

The notice of updating in Step (5) may be done by the control server 103 in which device setting 25 information is registered. In that case, control is made as follows. In the control server 103, the device drivers installed on clients (PC 104, 112, 115, 121,

and 122) on the network are controlled by a control table, and where device setting information is registered and updated from a certain client, the client having the driver of the device corresponding to the device setting information installed is retrieved from the control table, and a notice of updating of the driver may be sent to the client retrieved.

In the following, a processing procedure in PC which has received the notice of updating of the driver on the network, PC 112 as one example, will be described with reference to a flow chart of Fig. 24.

Fig. 24 is a flow chart for explaining one example of a sixth data processing procedure in the information processing apparatus showing the present embodiment, which corresponds to the processing procedure executed by PC 112 shown in Fig. 1, corresponding to the processing executed by CPU 2 in accordance with the control program stored in a memory such as HD 10 shown in Fig. 2. (1) to (5) designate the Steps.

First, CPU 2 of an information processing apparatus 112 checks whether or not a notice of updating a driver is made from other PCs 104, 111, 115, 121 and 122 through the network (1); where the updating notice is not present, processing is finished, while where the notice is present, judgment is made whether or not the driver for which the updating notice is made is installed on PC 112 (2); and where judgment is made

that the driver corresponding to the driver for which the updating notice is made is not installed on PC 112, processing is finished.

On the other hand, where in Step (2), the driver
5 corresponding to the driver for which the updating notice is made is installed, CPU 2 of the information processing apparatus 112 compares version information of the driver for which the updating notice is made with version information of the driver installed already to
10 judge whether or not the driver for which the updating notice is made is latest, that is, new as compared with the driver installed already (3), and where the driver for which the updating notice is made is old, processing is finished.

15 On the other hand, in Step (3) where the driver for which the updating notice is made is new, CPU 2 of the information processing apparatus 112 judges if the driver is updated (4). In this Step, a message is displayed in which whether or not updating is made is
20 indicated by a user. If updating is not made, processing is finished.

On the other hand, if updating is made, CPU 2 of the information processing apparatus 112 updates the driver on the basis of driver setting information
25 registered in the control server 103 (5, and processing is finished.

In Step (4), where a user has set such that

updating of a driver is automatically carried out in advance, a message display is not made but the driver is automatically updated.

While in the processing shown in a flow chart of Fig. 24, a description has been made of the case where when received an updating notice from other PCs, processes after Step (2) are executed, it is noted that where indication of execution of either device is made in my machine, it is installed on my machine.

Alternatively, where version information of a driver of either device indicated in execution is compared with version information of a driver of either device registered in the control server 103, and version information of a driver of either device indicated in execution is older than version information of a driver of either device registered in the control server 103, processing after Step (4) in Fig. 24 may take place.

Fig. 25 is a view for explaining one example of a driver updating setup window 1201 displayed on CPU 16 shown in Fig. 2.

In Fig. 25, numeral 1201 designates a driver updating setup window. Numeral 1201 designates a check box, which decides whether or not updating is automatically made. Numeral 1203 designates an execution button, and 1204 designates a cancel button.

According to the above-described embodiments, in the window on which are displayed PCs owned jointly on

the network and peripheral devices, the version check
of drivers of devices can be carried out by a simple
operation, and with respect to the device that need be
updated, updating processing can be executed easily
5 whereby drivers can be always placed latest, and the
work efficiency can be particularly improved.

In the following, the constitution of data
processing programs capable of read by the information
processing apparatus and information processing system
10 according to the present invention will be described
with reference to a memory map shown in Fig. 26.

Fig. 26 is a view for explaining one example of a
memory map of a storage medium for storing various data
processing programs capable of read by the information
processing apparatus and information processing system
15 according to the present invention.

Although not particularly shown, information for
controlling a group of programs stored in a storage
medium, for example, version information, a preparing
20 person being also stored, and information depending on
OS or the like on the read side of programs, for
example, icons for discriminating and displaying
programs are sometimes stored.

Further, data depending on various programs are
25 also controlled by the directory. Further, where
programs for installing various programs in a computer,
and programs for installation are compressed,

decompressing programs are also sometimes stored.

The functions shown in Figs. 10, 12, 17, 21, 24
and 25 in the present embodiments may be executed by a
host computer in accordance with the first to sixth
5 data processing programs installed externally. In that
case, even where a group of information including
programs is supplied to an output device by CD-ROM and
a storage medium such as a flash memory or FD, or from
an external storage medium through the network, the
10 present invention is applied.

As described above, needless to say, the object of
the present invention is achieved even by configuration
that a storage medium having a program code of a soft
ware for realizing the function of the aforementioned
15 embodiments recorded is supplied to the system or
apparatus, and a computer (or CPU or MPU) of the system
or apparatus reads and executes the program code stored
in the storage medium.

In this case, the program code itself read from
20 the storage medium is to realize a novel function of
the present invention, and the storage medium having
the program code stored is to constitute the present
invention.

The storage media for supplying a program code
25 that can be used include, for example, a floppy disk, a
hard disk, an optical disk, an optical magnetic disk,
CD-ROM, CD-R, a magnetic tape, a non-volatile memory

card, ROM, EEPROM, etc.

Further, needless to say, a program code read by a computer is executed whereby not only the function of the aforementioned embodiments is realized, but OS
5 (Operating System) or the like operated on the computer in accordance with the indication of the program code performs a part of or the whole actual processing, by which processing the function of the aforementioned embodiments is realized.

10 Further, needless to say, a program code read from the storage medium is written into a memory provided in a function expansion board inserted into a computer or a function expansion unit connected to a computer, and after this, CPU or the like provided in a function
15 expansion board or a function expansion unit performs a part of or the whole actual processing, by which processing the function of the aforementioned embodiments is realized.

Further, in order that the function processing of the present invention is realized by a computer, the program code itself installed in the computer is to realize the present invention. That is, the computer program itself for realizing the function processing of the present invention is also included in claims of the
25 present invention.

As the supplying method for a computer program, the program can be supplied, as mentioned above, by

storing it in FD or CD-ROM, having a computer read it and installing it in the computer, and in addition, the program can be supplied by connecting it to a home page of an internet using a plausa of a client computer, and
5 down-loading the computer program itself of the present invention, or a file compressed and including an automatic installing function from the home page. This can be also realized by dividing a program code constituting a program of the present invention into a
10 plurality of files, and down-loading the respective files from different home pages. That is, the WWW server for down-loading a program file for realizing the function processing of the present invention by a computer relative to a plurality of users is also
15 included in claims of the present invention.

Further, that can be realized by coding a program to store it in a storage medium such as FD and distribute it to a user, down-loading key information for decoding a code from a home page through an
20 internet relative to a user having fixed conditions cleared, and using the key information to thereby execute the coded program to install it in a computer.

As many apparently widely different embodiments of the present invention can be made without departing
25 from the spirit and scope hereof, it is to be understood that the invention is not limited to the specific embodiments thereof as defined in the appended

claims.

As explained above, according to the present invention, checking whether or not drivers of devices are new can be accomplished in a simple operation on 5 the PC on the network and the window on which devices are displayed, and driver setting information stored in the server are acquired to update the drivers, whereby the work efficiency of updating drivers can be particularly enhanced.

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WHAT IS CLAIMED IS:

1. An information processing apparatus for communicating with an external device through a network, comprising:
 - 5 acquiring means for acquiring the device information of a peripheral device shared on said network from said external device;
 - 10 system display controlling means for displaying, on a display section, a system condition of said peripheral device shared on said network together with an icon by a user interface on the basis of said device information acquired from said external device by said acquiring means;
 - 15 instructing means for instructing the install of a driver for said peripheral device shared on said network in said user interface having said system condition displayed by said system display controlling means; and
 - 20 install controlling means for acquiring driver setting information instructed to be installed by said instructing means from said external device to execute the automatic install processing of said driver.
- 25 2. The information processing apparatus according to claim 1, wherein said instructing means can instruct the install of drivers for a plurality of peripheral devices shared on said network by one operation

instruction in said user interface having said system condition displayed by said system display controlling means.

5 3. The information processing apparatus according to claim 2, wherein said instructing means instructs the install of said drivers for said plurality of peripheral devices under the control of a server icon, when an install instruction is issued selecting said
10 server icon in said user interface having said system condition displayed by said system display controlling means.

15 4. The information processing apparatus according to claim 3, wherein said instructing means instructs the install of a driver for a selected peripheral device, when an install instruction is issued selecting a peripheral device icon and displaying said system condition by said system display controlling means.
20

25 5. The information processing apparatus according to claim 1, further comprising install shifting means for shifting to an install function provided by an OS, when said driver instructed to be installed by said instructing means cannot be acquired from said external device.

6. The information processing apparatus according
to claim 5, further comprising registering means for
extracting the setting information of said driver which
is to be installed by said install function provided by
5 said OS and for registering the thus extracted setting
information in an external device which is a management
server through said network.

7. The information processing apparatus according
10 to claim 1, further comprising registering means for
extracting the setting information of said driver which
is to be installed by said install controlling means
and for registering the thus extracted setting
information in an external device which is a management
15 server through said network.

8. The information processing apparatus according
to claim 7, further comprising driver information
display controlling means for acquiring said registered
20 setting information of said driver from said management
server and for displaying the thus acquired setting
information on said display section, in executing said
install processing of said driver by said install
controlling means.

25

9. An information processing method for
communicating with an external device through a

network, comprising:

 acquiring step for acquiring the device information of a peripheral device shared on said network from said external device;

5 system display controlling step for displaying, on a display section, a system condition of said peripheral device shared on said network together with an icon by a user interface on the basis of said device information acquired from said external device by said

10 acquiring step;

 instructing step for instructing the install of a driver for said peripheral device shared on said network in said user interface having said system condition displayed by said system display controlling step; and

15 install controlling step for acquiring driver setting information instructed to be installed by said instructing step from said external device to execute the automatic install processing of said driver.

20

 10. The information processing method according to claim 9, wherein said instructing step can instruct the install of drivers for a plurality of peripheral devices shared on said network by one operation
25 instruction in said user interface having said system condition displayed by said system display controlling step.

11. The information processing method according
to claim 10, wherein said instructing step instructs
the install of said drivers for said plurality of
peripheral devices under the control of a server icon,
5 when an install instruction is issued selecting said
server icon in said user interface having said system
condition displayed by said system display controlling
step.

10 12. The information processing method according
to claim 11, wherein said instructing step instructs
the install of a driver for a selected peripheral
device, when an install instruction is issued selecting
a peripheral device icon and displaying said system
15 condition by said system display controlling step.

13. The information processing method according
to claim 9, further comprising install shifting step
for shifting to an install function provided by an OS,
20 when said driver instructed to be installed by said
instructing step cannot be acquired from said external
device.

14. The information processing method according
25 to claim 13, further comprising registering step for
extracting the setting information of said driver which
is to be installed by said install function provided by

said OS and for registering the thus extracted setting information in an external device which is a management server through said network.

5 15. The information processing method according to claim 9, further comprising registering step for extracting the setting information of said driver which is to be installed by said install controlling step and for registering the thus extracted setting information
10 in an external device which is a management server through said network.

15 16. The information processing method according to claim 15, further comprising driver information display controlling step for acquiring said registered setting information of said driver from said management server and for displaying the thus acquired setting information on said display section, in executing said install processing of said driver by said install
20 controlling step.

17. A computer-readable memory medium which stores a program for communicating with an external device through a network, said program comprising:
25 acquiring step for acquiring the device information of a peripheral device shared on said

network from said external device;

system display controlling step for displaying, on a display section, a system condition of said peripheral device shared on said network together with an icon by a user interface on the basis of said device information acquired from said external device by said acquiring step;

instructing step for instructing the install of a driver for said peripheral device shared on said 10 network in said user interface having said system condition displayed by said system display controlling step; and

install controlling step for acquiring driver setting information instructed to be installed by said 15 instructing step from said external device to execute the automatic install processing of said driver.

18. The computer-readable memory medium according to claim 17, wherein said instructing step can instruct the install of drivers for a plurality of peripheral devices shared on said network by one operation instruction in said user interface having said system condition displayed by said system display controlling step.

25

19. The computer-readable memory medium according to claim 18, wherein said instructing step instructs

the install of said drivers for said plurality of peripheral devices under the control of a server icon, when an install instruction is issued selecting said server icon in said user interface having said system condition displayed by said system display controlling step.

20. The computer-readable memory medium according to claim 19, wherein said instructing step instructs the install of a driver for a selected peripheral device, when an install instruction is issued selecting a peripheral device icon and displaying said system condition by said system display controlling step.

15 21. The computer-readable memory medium according to claim 17, further comprising install shifting step for shifting to an install function provided by an OS, when said driver instructed to be installed by said instructing step cannot be acquired from said external 20 device.

22. The computer-readable memory medium according to claim 21, further comprising registering step for extracting the setting information of said driver which 25 is to be installed by said install function provided by said OS and for registering the thus extracted setting information in an external device which is a management

server through said network.

23. The computer-readable memory medium according
to claim 17, further comprising registering step for
5 extracting the setting information of said driver which
is to be installed by said install controlling step and
for registering the thus extracted setting information
in an external device which is a management server
through said network.

10

24. The computer-readable memory medium according
to claim 23, further comprising driver information
display controlling step for acquiring said registered
setting information of said driver from said management
15 server and for displaying the thus acquired setting
information on said display section, in executing said
install processing of said driver by said install
controlling step.

20

25. A program for communicating with an external
device through a network, comprising:

acquiring step for acquiring the device
information of a peripheral device shared on said
network from said external device;

25

system display controlling step for displaying, on
a display section, a system condition of said
peripheral device shared on said network together with

an icon by a user interface on the basis of said device information acquired from said external device by said acquiring step;

5 instructing step for instructing the install of a driver for said peripheral device shared on said network in said user interface having said system condition displayed by said system display controlling step; and

10 install controlling step for acquiring driver setting information instructed to be installed by said instructing step from said external device to execute the automatic install processing of said driver.

15 26. The program according to claim 25, wherein said instructing step can instruct the install of drivers for a plurality of peripheral devices shared on said network by one operation instruction in said user interface having said system condition displayed by said system display controlling step.

20 27. The program according to claim 26, wherein said instructing step instructs the install of said drivers for said plurality of peripheral devices under the control of a server icon, when an install instruction is issued selecting said server icon in said user interface having said system condition displayed by said system display controlling step.

28. The program according to claim 27, wherein
said instructing step instructs the install of a driver
for a selected peripheral device, when an install
instruction is issued selecting a peripheral device
5 icon and displaying said system condition by said
system display controlling step.

29. The program according to claim 25, further
comprising install shifting step for shifting to an
10 install function provided by an OS, when said driver
instructed to be installed by said instructing step
cannot be acquired from said external device.

30. The program according to claim 29, further
15 comprising registering step for extracting the setting
information of said driver which is to be installed by
said install function provided by said OS and for
registering the thus extracted setting information in
an external device which is a management server through
20 said network. .

31. The program according to claim 25, further
comprising registering step for extracting the setting
information of said driver which is to be installed by
25 said install controlling step and for registering the
thus extracted setting information in an external
device which is a management server through said

network.

32. The program according to claim 31, further comprising driver information display controlling step
5 for acquiring said registered setting information of said driver from said management server and for displaying the thus acquired setting information on said display section, in executing said install processing of said driver by said install controlling
10 step.

33. An information processing apparatus for communicating with an external device through a network, comprising:

15 device information acquiring means for acquiring the device information of a peripheral device shared on said network from said external device;
20 system display controlling means for displaying, on a display section, an overall system condition of said peripheral device shared on said network and a system condition of a user network of a peripheral device arbitrarily selected from said overall system condition together with icons by a user interface in such a manner that these conditions can be identified,
25 on the basis of said device information acquired from said external device by said device information acquiring means;

instructing means for instructing to register said peripheral device in said user network; and

install controlling means for executing the install processing of a driver for said peripheral 5 device, when register of said peripheral device to said user network is newly instructed by said instructing means.

34. The information processing apparatus
10 according to claim 33, wherein said system display controlling means dividedly displays a system window for displaying said overall system condition and a favorite window for displaying said system condition of said user network.

15
35. The information processing apparatus according to claim 34, wherein said favorite window has the icons of peripheral devices arranged around an icon of its own information processing apparatus.

20
36. The information processing apparatus according to claim 34, wherein said instructing means instructs the register of said peripheral device by effecting the movement of said icon between said system 25 window and said favorite window which are dividedly displayed by said system displaying means.

37. The information processing apparatus according to claim 36, further comprising judging means for judging whether said driver setting information for a driver of said icon has been already registered in
5 its own information processing apparatus during the movement of said icon by said instructing means, wherein

10 said install controlling means acquires said driver setting information which should be installed from said external device to execute the install processing of said driver, when it is determined by said judging means that said driver setting information has not been registered.

15 38. The information processing apparatus according to claim 37, wherein said install controlling means uses said registered driver setting information to execute said install processing of said driver, when it is determined by said judging means that said driver
20 setting information has been already registered.

25 39. The information processing apparatus according to claim 34, wherein said system displaying means identifies the display mode of an icon regarding an installed device between said system window and said favorite window which are separately displayed after completion of install by said install controlling

means, and displays the thus identified display mode.

40. The information processing apparatus according to claim 34, further comprising writing means 5 for writing positional information of an icon displayed in said favorite window into storing means,

said first system displaying means arranging and displaying said icon on the basis of said positional information stored in said storing means.

10

41. The information processing apparatus according to claim 36, wherein said instructing means can instruct, by drag and drop, the movement of said icon between said system window and said favorite 15 window which are dividedly displayed.

42. An information processing method for communicating with an external device through a network, comprising:

20

device information acquiring step for acquiring the device information of a peripheral device shared on said network from said external device;

25

system display controlling step for displaying, on a display section, an overall system condition of said peripheral device shared on said network and a system condition of a user network of a peripheral device arbitrarily selected from said overall system condition

together with icons by a user interface in such a manner that these conditions can be identified, on the basis of said device information acquired from said external device by said device information acquiring

5 step;

instructing step for instructing to register said peripheral device in said user network; and

install controlling step for executing the install processing of a driver for said peripheral device, when
10 register of said peripheral device to said user network is newly instructed by said instructing step.

43. The information processing method according to claim 42, wherein said system display controlling step dividedly displays a system window for displaying said overall system condition and a favorite window for displaying said system condition of said user network.

44. The information processing method according to claim 43, wherein said favorite window has the icons of peripheral devices arranged around an icon of its own information processing apparatus.

45. The information processing method according to claim 43, wherein said instructing step instructs the register of said peripheral device by effecting the movement of said icon between said system window and

said favorite window which are dividedly displayed by
said system displaying step.

46. The information processing method according
5 to claim 45, further comprising judging step for
judging whether said driver setting information for a
driver of said icon has been already registered in its
own information processing apparatus during the
movement of said icon by said instructing step, wherein

10 said install controlling step acquires said driver
setting information which should be installed from said
external device to execute the install processing of
said driver, when it is determined by said judging step
that said driver setting information has not been
15 registered.

47. The information processing method according
to claim 46, wherein said install controlling step uses
said registered driver setting information to execute
20 said install processing of said driver, when it is
determined by said judging step that said driver
setting information has been already registered.

48. The information processing method according
25 to claim 43, wherein said system displaying step
identifies the display mode of an icon regarding an
installed device between said system window and said

favorite window which are separately displayed after completion of install by said install controlling step, and displays the thus identified display mode.

5 49. The information processing method according to claim 43, further comprising writing step for writing positional information of an icon displayed in said favorite window into storing step,

10 said first system displaying step arranging and displaying said icon on the basis of said positional information stored in said storing step.

15 50. The information processing method according to claim 45, wherein said instructing step can instruct, by drag and drop, the movement of said icon between said system window and said favorite window which are dividedly displayed.

20 51. A computer-readable memory medium which stores a program for communicating with an external device through a network, said program comprising:
 device information acquiring step for acquiring the device information of a peripheral device shared on said network from said external device;
25 system display controlling step for displaying, on a display section, an overall system condition of said

peripheral device shared on said network and a system
condition of a user network of a peripheral device
arbitrarily selected from said overall system condition
together with icons by a user interface in such a
5 manner that these conditions can be identified, on the
basis of said device information acquired from said
external device by said device information acquiring
step;

instructing step for instructing to register said
10 peripheral device in said user network; and

install controlling step for executing the install
processing of a driver for said peripheral device, when
register of said peripheral device to said user network
is newly instructed by said instructing step.

15
52. The computer-readable memory medium according
to claim 51, wherein said system display controlling
step dividedly displays a system window for displaying
said overall system condition and a favorite window for
20 displaying said system condition of said user network.

53. The computer-readable memory medium according
to claim 52, wherein said favorite window has the icons
of peripheral devices arranged around an icon of its
25 own information processing apparatus.

54. The computer-readable memory medium according

to claim 52, wherein said instructing step instructs
the register of said peripheral device by effecting the
movement of said icon between said system window and
said favorite window which are dividedly displayed by
5 said system displaying step.

55. The computer-readable memory medium according
to claim 54, further comprising judging step for
judging whether said driver setting information for a
10 driver of said icon has been already registered in its
own information processing apparatus during the
movement of said icon by said instructing step, wherein
 said install controlling step acquires said driver
setting information which should be installed from said
15 external device to execute the install processing of
said driver, when it is determined by said judging step
that said driver setting information has not been
registered.

20 56. The computer-readable memory medium according
to claim 55, wherein said install controlling step uses
said registered driver setting information to execute
said install processing of said driver, when it is
determined by said judging step that said driver
25 setting information has been already registered.

57. The computer-readable memory medium according

to claim 52, wherein said system displaying step
identifies the display mode of an icon regarding an
installed device between said system window and said
favorite window which are separately displayed after
5 completion of install by said install controlling step,
and displays the thus identified display mode.

58. The computer-readable memory medium according
to claim 52, further comprising writing step for
10 writing positional information of an icon displayed in
said favorite window into storing step,

 said first system displaying step arranging and
 displaying said icon on the basis of said positional
 information stored in said storing step.

15
59. The computer-readable memory medium according
to claim 54, wherein said instructing step can
instruct, by drag and drop, the movement of said icon
between said system window and said favorite window
20 which are dividedly displayed.

60. A program for communicating with an external
device through a network, said program comprising:
 device information acquiring step for acquiring
25 the device information of a peripheral device shared on
 said network from said external device;

system display controlling step for displaying, on
a display section, an overall system condition of said
peripheral device shared on said network and a system
condition of a user network of a peripheral device
5 arbitrarily selected from said overall system condition
together with icons by a user interface in such a
manner that these conditions can be identified, on the
basis of said device information acquired from said
external device by said device information acquiring
10 step;
 instructing step for instructing to register said
peripheral device in said user network; and
 install controlling step for executing the install
processing of a driver for said peripheral device, when
15 register of said peripheral device to said user network
is newly instructed by said instructing step.

61. The program according to claim 60, wherein
said system display controlling step dividedly displays
20 a system window for displaying said overall system
condition and a favorite window for displaying said
system condition of said user network.

62. The program according to claim 61, wherein
25 said favorite window has the icons of peripheral
devices arranged around an icon of its own information
processing apparatus.

63. The program according to claim 61, wherein
said instructing step instructs the register of said
peripheral device by effecting the movement of said
icon between said system window and said favorite
window which are dividedly displayed by said system
displaying step.

5 64. The program according to claim 63, further
comprising judging step for judging whether said driver
setting information for a driver of said icon has been
already registered in its own information processing
apparatus during the movement of said icon by said
instructing step, wherein

10 15 said install controlling step acquires said driver
setting information which should be installed from said
external device to execute the install processing of
said driver, when it is determined by said judging step
that said driver setting information has not been
registered.

20 25 65. The program according to claim 64, wherein
said install controlling step uses said registered
driver setting information to execute said install
processing of said driver, when it is determined by
said judging step that said driver setting information
has been already registered.

66. The program according to claim 61, wherein
said system displaying step identifies the display mode
of an icon regarding an installed device between said
system window and said favorite window which are
5 separately displayed after completion of install by
said install controlling step, and displays the thus
identified display mode.

67. The program according to claim 61, further
10 comprising writing step for writing positional
information of an icon displayed in said favorite
window into storing step,

15 said first system displaying step arranging and
displaying said icon on the basis of said positional
information stored in said storing step.

68. The program according to claim 63, wherein
said instructing step can instruct, by drag and drop,
the movement of said icon between said system window
20 and said favorite window which are dividedly displayed.

69. An information processing apparatus for
communicating with an external device through a
network, comprising:

25 recognizing means for recognizing the version
information of a driver for a peripheral device
incorporated in said information processing apparatus;

acquiring means for acquiring the version information of a driver for a peripheral device shared on said network;

specifying means for specifying a peripheral 5 device, whose driver should be updated, incorporated in said information processing apparatus; and

updating means for updating said driver for said peripheral device specified by said specifying means on the basis of said version information of said driver 10 acquired by said acquiring means and said version information of said driver recognized by said recognizing means.

70. The information processing apparatus 15 according to claim 69, further comprising comparing means for comparing said version information recognized by said recognizing means with said version information acquired by said acquiring means, wherein

said updating means updates a driver for a 20 corresponding peripheral device, when it is shown by said comparing means that said version information acquired by said acquiring means is newer than said version information recognized by said recognizing means.

25

71. The information processing apparatus according to claim 69, wherein said updating means

acquires, from said external device, the driver setting information of a driver which should be updated, and then updates said driver.

5 72. The information processing apparatus according to claim 69, further comprising transmitting means for transmitting said version information and said driver setting information of said updated driver in order to register them in said external device, when
10 said driver for a peripheral device incorporated in said information processing apparatus is updated.

73. The information processing apparatus according to claim 69, further comprising:

15 device information acquiring means for acquiring the device information of a peripheral device shared on said network from said external device; and
20 system display controlling means for displaying, on a display section, a system window for displaying an overall system condition of said peripheral device shared on said network and a favorite window for displaying a system condition of a user network of a peripheral device arbitrarily selected from said overall system condition together with icons by a user
25 interface in such a manner that these windows can be identified, on the basis of said device information acquired from said external device by said device

information acquiring means, wherein

 said updating means execute updating processing of
 drivers for all the peripheral devices in said favorite
 windows by one operation instruction.

5

74. An information processing method for
communicating with an external device through a
network, comprising:

 recognizing step for recognizing the version
10 information of a driver for a peripheral device
incorporated in said information processing apparatus;

 acquiring step for acquiring the version
information of a driver for a peripheral device shared
on said network;

15 specifying step for specifying a peripheral
device, whose driver should be updated, incorporated in
said information processing apparatus; and

20 updating step for updating said driver for said
peripheral device specified by said specifying step on
the basis of said version information of said driver
acquired by said acquiring step and said version
information of said driver recognized by said
recognizing step.

25 75. The information processing method according
to claim 74, further comprising comparing step for
comparing said version information recognized by said

recognizing step with said version information acquired by said acquiring step, wherein

 said updating step updates a driver for a corresponding peripheral device, when it is shown by

5 said comparing step that said version information acquired by said acquiring step is newer than said version information recognized by said recognizing step.

10 76. The information processing method according to claim 74, wherein said updating step acquires, from said external device, the driver setting information of a driver which should be updated, and then updates said driver.

15 77. The information processing method according to claim 74, further comprising transmitting step for transmitting said version information and said driver setting information of said updated driver in order to 20 register them in said external device, when said driver for a peripheral device incorporated in said information processing apparatus is updated.

25 78. The information processing method according to claim 74, further comprising:

 device information acquiring step for acquiring the device information of a peripheral device shared on

5 said network from said external device; and
 system display controlling step for displaying, on
 a display section, a system window for displaying an
 overall system condition of said peripheral device
10 shared on said network and a favorite window for
 displaying a system condition of a user network of a
 peripheral device arbitrarily selected from said
 overall system condition together with icons by a user
 interface in such a manner that these windows can be
15 identified, on the basis of said device information
 acquired from said external device by said device
 information acquiring step, wherein
 said updating step execute updating processing of
 drivers for all the peripheral devices in said favorite
15 windows by one operation instruction.

79. A computer-readable memory medium which
stores a program for communicating with an external
device through a network, said program comprising:
20 recognizing step for recognizing the version
 information of a driver for a peripheral device
 incorporated in said information processing apparatus;
 acquiring step for acquiring the version
 information of a driver for a peripheral device shared
25 on said network;
 specifying step for specifying a peripheral

device, whose driver should be updated, incorporated in
said information processing apparatus; and

updating step for updating said driver for said
peripheral device specified by said specifying step on
5 the basis of said version information of said driver
acquired by said acquiring step and said version
information of said driver recognized by said
recognizing step.

10 80. The computer-readable memory medium according
to claim 79, further comprising comparing step for
comparing said version information recognized by said
recognizing step with said version information acquired
by said acquiring step, wherein

15 said updating step updates a driver for a
corresponding peripheral device, when it is shown by
said comparing step that said version information
acquired by said acquiring step is newer than said
version information recognized by said recognizing
step.

20 81. The computer-readable memory medium according
to claim 79, wherein said updating step acquires, from
said external device, the driver setting information of
25 a driver which should be updated, and then updates said
driver.

82. The computer-readable memory medium according
to claim 79, further comprising transmitting step for
transmitting said version information and said driver
setting information of said updated driver in order to
5 register them in said external device, when said driver
for a peripheral device incorporated in said
information processing apparatus is updated.

83. The computer-readable memory medium according
10 to claim 79, further comprising:

device information acquiring step for acquiring
the device information of a peripheral device shared on
said network from said external device; and

15 system display controlling step for displaying, on
a display section, a system window for displaying an
overall system condition of said peripheral device
shared on said network and a favorite window for
displaying a system condition of a user network of a
peripheral device arbitrarily selected from said
overall system condition together with icons by a user
20 interface in such a manner that these windows can be
identified, on the basis of said device information
acquired from said external device by said device
information acquiring step, wherein

25 said updating step execute updating processing of
drivers for all the peripheral devices in said favorite
windows by one operation instruction.

84. A program for communicating with an external device through a network, said program comprising:
 recognizing step for recognizing the version information of a driver for a peripheral device
5 incorporated in said information processing apparatus;
 acquiring step for acquiring the version information of a driver for a peripheral device shared on said network;
 specifying step for specifying a peripheral
10 device, whose driver should be updated, incorporated in said information processing apparatus; and
 updating step for updating said driver for said peripheral device specified by said specifying step on the basis of said version information of said driver
15 acquired by said acquiring step and said version information of said driver recognized by said recognizing step.

85. The program according to claim 84, further comprising comparing step for comparing said version information recognized by said recognizing step with said version information acquired by said acquiring step, wherein
 said updating step updates a driver for a
25 corresponding peripheral device, when it is shown by said comparing step that said version information

acquired by said acquiring step is newer than said version information recognized by said recognizing step.

5 86. The program according to claim 84, wherein said updating step acquires, from said external device, the driver setting information of a driver which should be updated, and then updates said driver.

10 87. The program according to claim 84, further comprising transmitting step for transmitting said version information and said driver setting information of said updated driver in order to register them in said external device, when said driver for a peripheral 15 device incorporated in said information processing apparatus is updated.

20 88. The program according to claim 84, further comprising:

 device information acquiring step for acquiring the device information of a peripheral device shared on said network from said external device; and
 system display controlling step for displaying, on a display section, a system window for displaying an overall system condition of said peripheral device shared on said network and a favorite window for displaying a system condition of a user network of a

5 peripheral device arbitrarily selected from said
overall system condition together with icons by a user
interface in such a manner that these windows can be
identified, on the basis of said device information
acquired from said external device by said device
information acquiring step, wherein

10 said updating step execute updating processing of
drivers for all the peripheral devices in said favorite
windows by one operation instruction.

10

89. An information processing apparatus for
communicating with an external device through a
network, comprising:

15

receiving means for receiving update notification
including the version information of a driver for a
peripheral device from said external device;

20 and

25 updating means for updating said driver for said
peripheral device specified by said specifying means on
the basis of said version information of said driver
whose update notification has been received by said
receiving means and said version information of said
incorporated driver.

90. The information processing apparatus
according to claim 89, further comprising comparing
means for comparing said version information recognized
by said recognizing means with said version information
5 acquired by said acquiring means, wherein
said updating means updates a driver for a
corresponding peripheral device, when it is shown by
said comparing means that said version information
acquired by said acquiring means is newer than said
10 version information recognized by said recognizing
means.

91. The information processing apparatus
according to claim 89, wherein said updating means
15 acquires, from said external device, the driver setting
information of a driver which should be updated, and
then updates said driver.

92. The information processing apparatus
20 according to claim 90, further comprising judging means
for judging whether said driver for said peripheral
device whose update notification has been transmitted
from said external device is incorporated in said
information processing apparatus, wherein
25 said comparing means compares respective version
information, when it is determined by said judging
means that said driver is incorporated in said

information processing apparatus.

93. The information processing apparatus according to claim 92, wherein said updating means does
5 not execute said updating processing of said driver, when it is determined by said judging means that said driver is not incorporated in said information processing apparatus.

10 94. An information processing method for communicating with an external device through a network, comprising:

15 receiving step for receiving update notification including the version information of a driver for a peripheral device from said external device;

recognizing step for recognizing the version information of a driver for a peripheral device incorporated in said information processing apparatus; and

20 updating step for updating said driver for said peripheral device specified by said specifying step on the basis of said version information of said driver whose update notification has been received by said receiving step and said version information of said 25 incorporated driver.

95. The information processing method according

to claim 94, further comprising comparing step for comparing said version information recognized by said recognizing step with said version information acquired by said acquiring step, wherein

5 said updating step updates a driver for a corresponding peripheral device, when it is shown by said comparing step that said version information acquired by said acquiring step is newer than said version information recognized by said recognizing
10 step.

96. The information processing method according to claim 94, wherein said updating step acquires, from said external device, the driver setting information of
15 a driver which should be updated, and then updates said driver.

97. The information processing method according to claim 95, further comprising judging step for
20 judging whether said driver for said peripheral device whose update notification has been transmitted from said external device is incorporated in said information processing apparatus, wherein
25 said comparing step compares respective version information, when it is determined by said judging step that said driver is incorporated in said information processing apparatus.

98. The information processing method according
to claim 97, wherein said updating step does not
execute said updating processing of said driver, when
it is determined by said judging step that said driver
5 is not incorporated in said information processing
apparatus.

99. A computer-readable memory medium which
stores a program for communicating with an external
10 device through a network, said program comprising:
receiving step for receiving update notification
including the version information of a driver for a
peripheral device from said external device;
recognizing step for recognizing the version
15 information of a driver for a peripheral device
incorporated in said information processing apparatus;
and
updating step for updating said driver for said
peripheral device specified by said specifying step on
20 the basis of said version information of said driver
whose update notification has been received by said
receiving step and said version information of said
incorporated driver.

25 100. The computer-readable memory medium
according to claim 99, further comprising comparing

step for comparing said version information recognized by said recognizing step with said version information acquired by said acquiring step, wherein

said updating step updates a driver for a
5 corresponding peripheral device, when it is shown by
said comparing step that said version information
acquired by said acquiring step is newer than said
version information recognized by said recognizing
step.

10

101. The computer-readable memory medium
according to claim 99, wherein said updating step
acquires, from said external device, the driver setting
information of a driver which should be updated, and
15 then updates said driver.

20

102. The computer-readable memory medium
according to claim 100, further comprising judging step
for judging whether said driver for said peripheral
device whose update notification has been transmitted
from said external device is incorporated in said
information processing apparatus, wherein
25 said comparing step compares respective version
information, when it is determined by said judging step
that said driver is incorporated in said information
processing apparatus.

103. The computer-readable memory medium
according to claim 102, wherein said updating step does
not execute said updating processing of said driver,
when it is determined by said judging step that said
5 driver is not incorporated in said information
processing apparatus.

104. A program for communicating with an external
device through a network, said program comprising:
10 receiving step for receiving update notification
including the version information of a driver for a
peripheral device from said external device;
recognizing step for recognizing the version
information of a driver for a peripheral device
15 incorporated in said information processing apparatus;
and
updating step for updating said driver for said
peripheral device specified by said specifying step on
the basis of said version information of said driver
20 whose update notification has been received by said
receiving step and said version information of said
incorporated driver.

105. The program according to claim 104, further
25 comprising comparing step for comparing said version
information recognized by said recognizing step with

said version information acquired by said acquiring
 step, wherein

 said updating step updates a driver for a
 corresponding peripheral device, when it is shown by
5 said comparing step that said version information
 acquired by said acquiring step is newer than said
 version information recognized by said recognizing
 step.

10 106. The program according to claim 104, wherein
 said updating step acquires, from said external device,
 the driver setting information of a driver which should
 be updated, and then updates said driver.

15 107. The program according to claim 105, further
 comprising judging step for judging whether said driver
 for said peripheral device whose update notification
 has been transmitted from said external device is
 incorporated in said information processing apparatus,
20 wherein

 said comparing step compares respective version
 information, when it is determined by said judging step
 that said driver is incorporated in said information
 processing apparatus.

25 108. The program according to claim 107, wherein
 said updating step does not execute said updating

processing of said driver, when it is determined by
said judging step that said driver is not incorporated
in said information processing apparatus.

ABSTRACT OF THE DISCLOSURE

An information processing apparatus simply and quickly updates device drivers for devices shared on the network. If version information of a driver for a network device registered in a management server is newer than that of a driver installed in a PC, a CPU obtains driver setup information from the management server, and updates the driver based on the driver setup information.

2025 RELEASE UNDER E.O. 14176

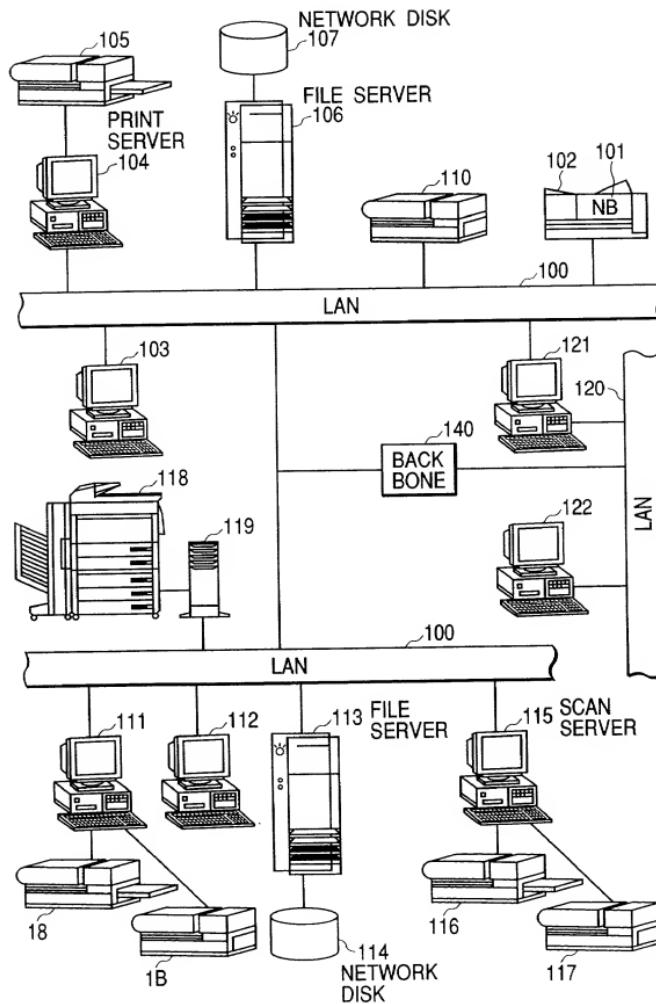
FIG. 1

FIG. 2

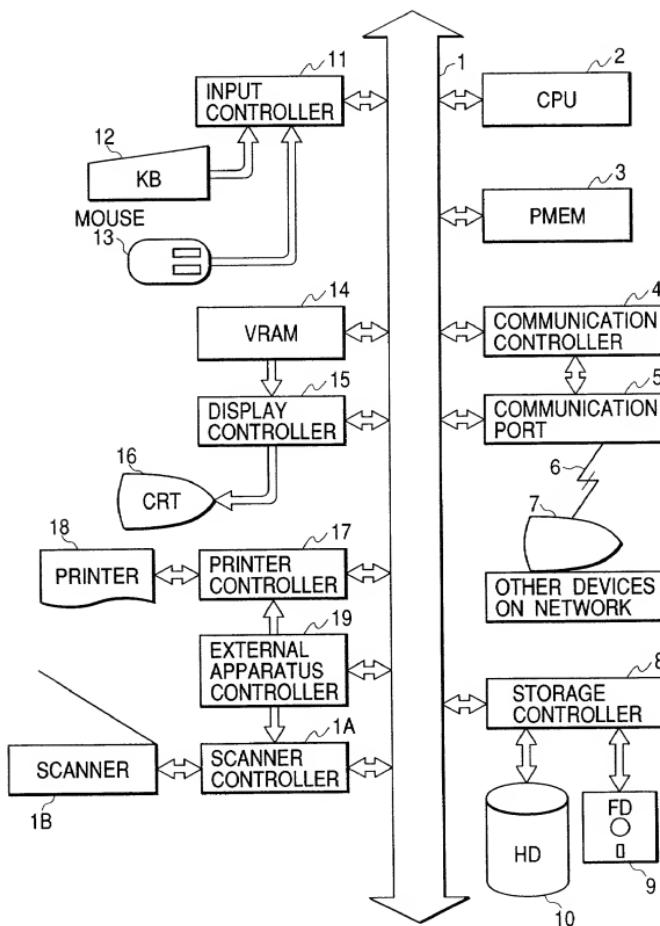


FIG. 3

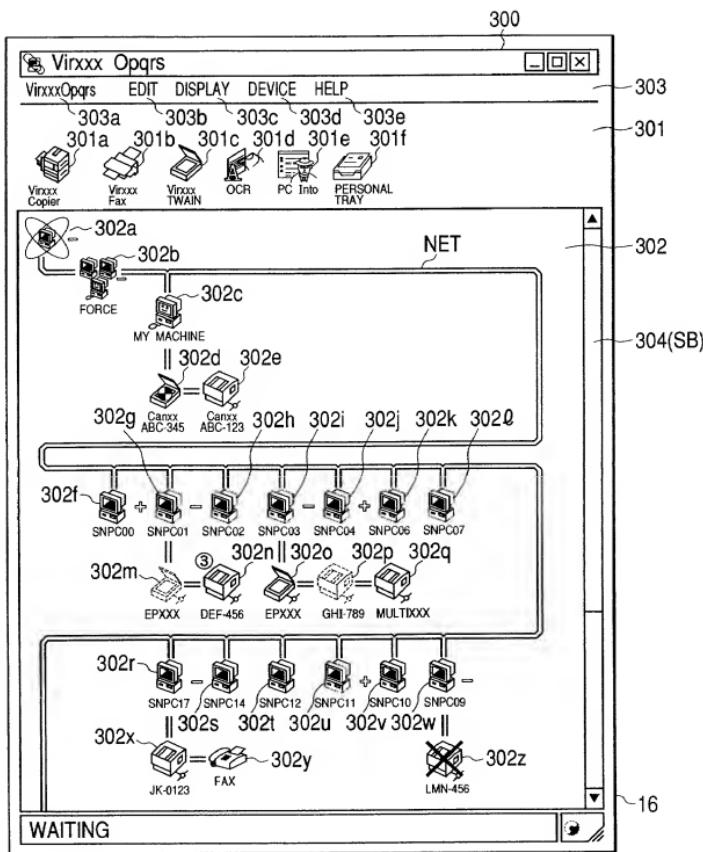


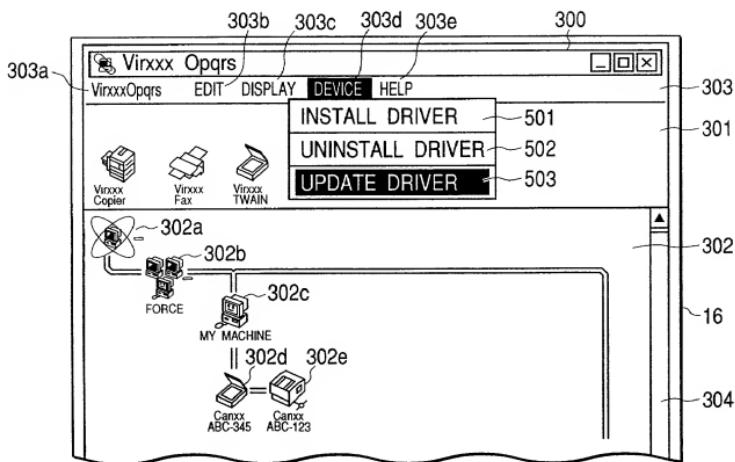
FIG. 4

FIG. 5

41	NO. OF DATA	41a
	COMMENT	41b
42	NAME	42a
	VERSION	42b
	CORRESPONDING OS	42c
	SETUP	42d
	COMMENT	42e
1	NAME	43a
	VERSION	43b
	CORRESPONDING OS	43c
	SETUP	43d
	COMMENT	43e
2	NAME	43a
	VERSION	43b
	CORRESPONDING OS	43c
	SETUP	43d
	COMMENT	43e
⋮		
N	NAME	44a
	VERSION	44b
	CORRESPONDING OS	44c
	SETUP	44d
	COMMENT	44e

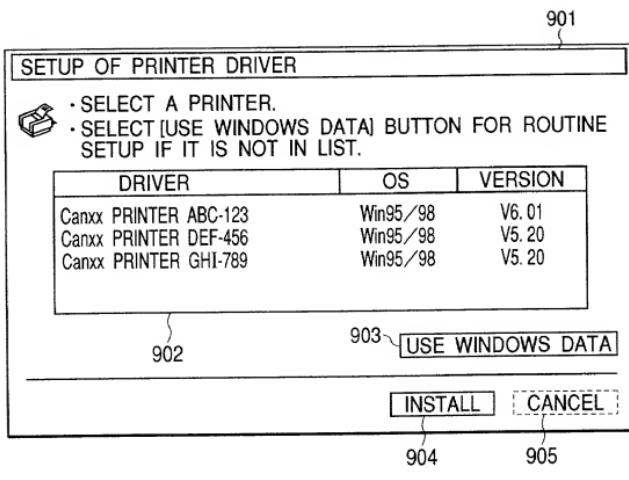
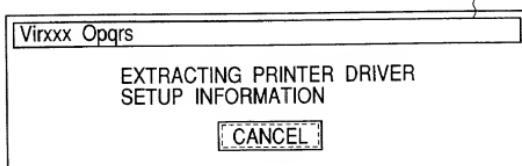
FIG. 6*FIG. 7*

FIG. 8

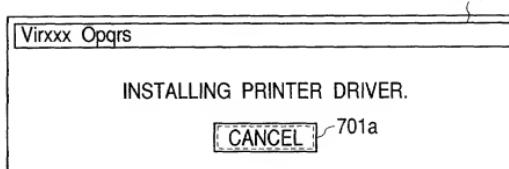


FIG. 9



FIG. 10

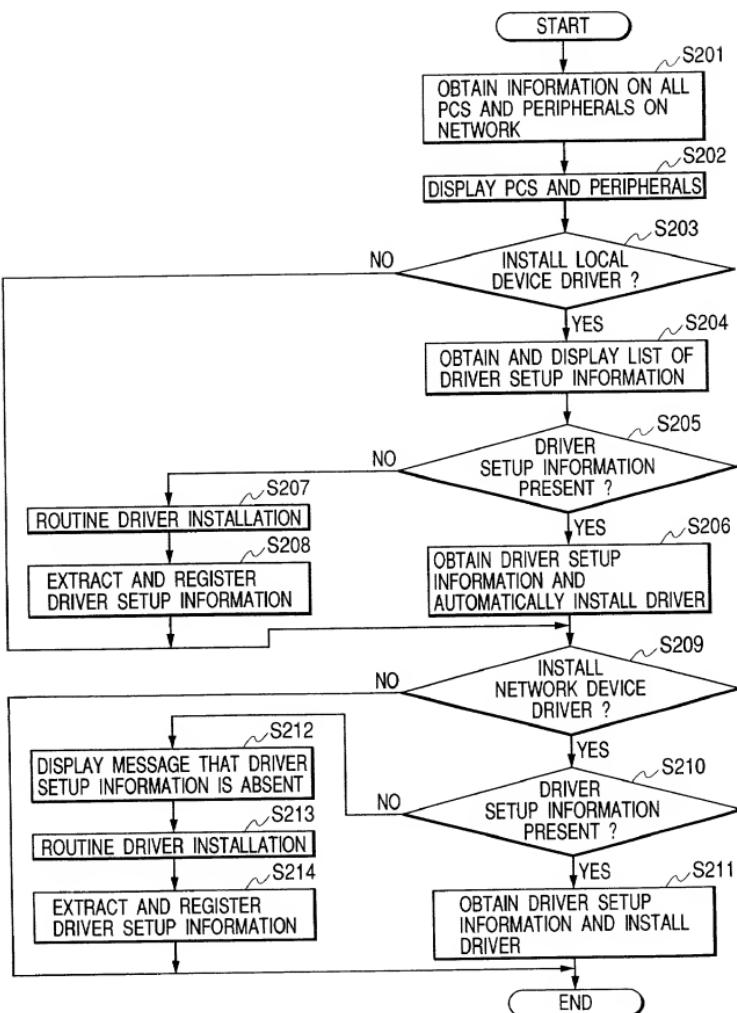


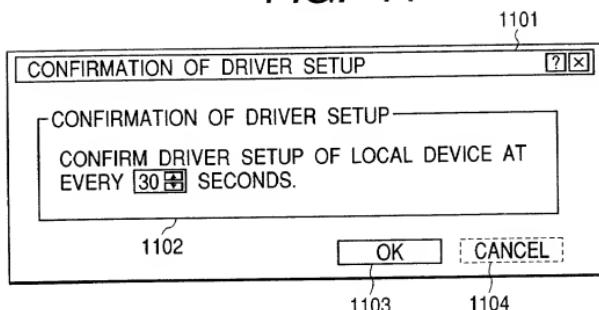
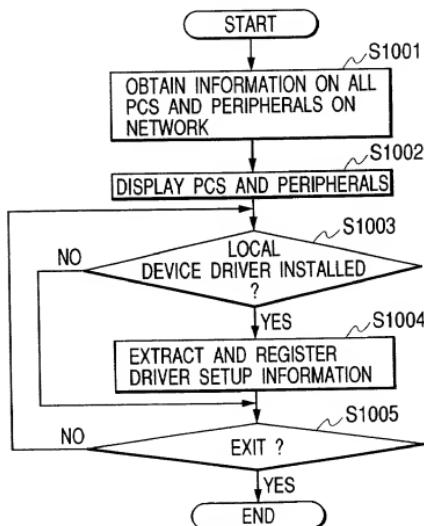
FIG. 11**FIG. 12**

FIG. 13

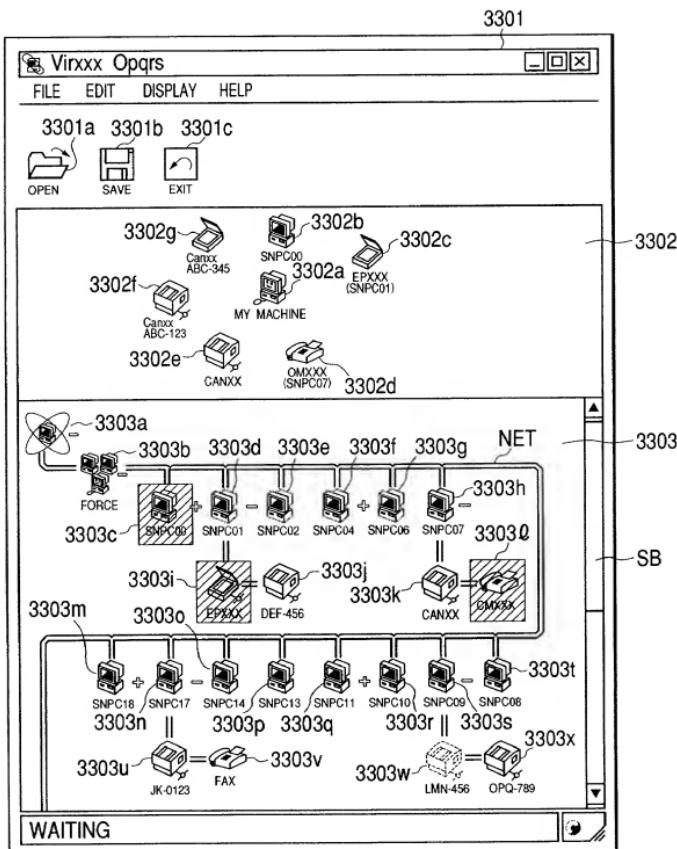


FIG. 14

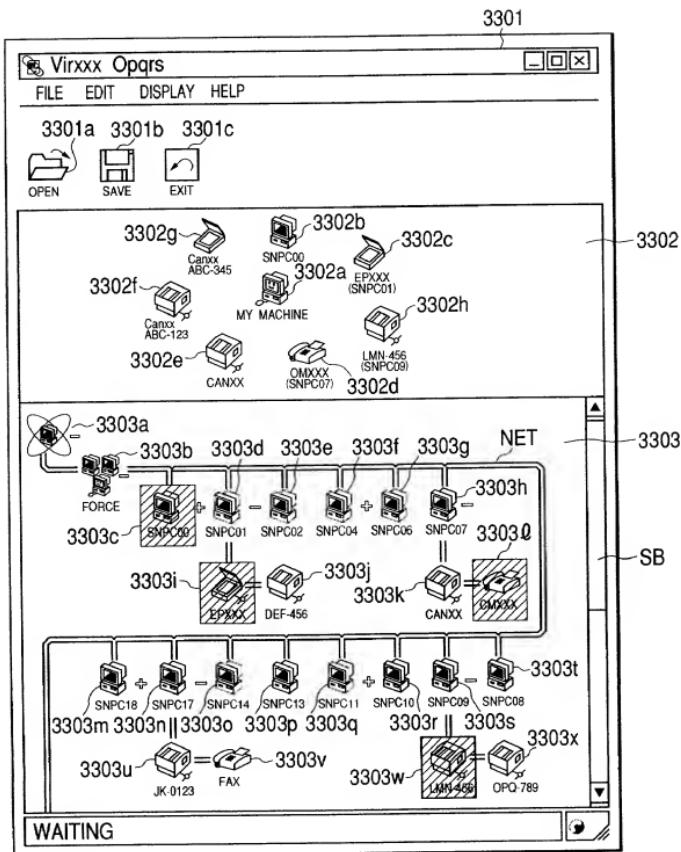


FIG. 15

61	MACHINE	61a
	USER	61b
	DATE	61c
	NO. OF DATA	61d
	COMMENT	61e
62	NAME	62a
1	ATTRIBUTE	62b
	STATUS	62c
	DISPLAY POSITION	62d
	COMMENT	62e
2	NAME	63a
	ATTRIBUTE	63b
	STATUS	63c
	DISPLAY POSITION	63d
	COMMENT	63e
	⋮	
N	NAME	64a
	ATTRIBUTE	64b
	STATUS	64c
	DISPLAY POSITION	64d
	COMMENT	64e

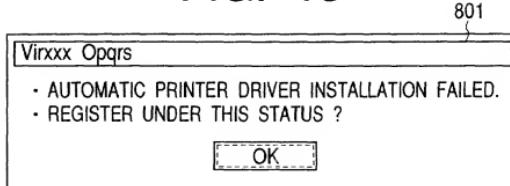
FIG. 16

FIG. 17

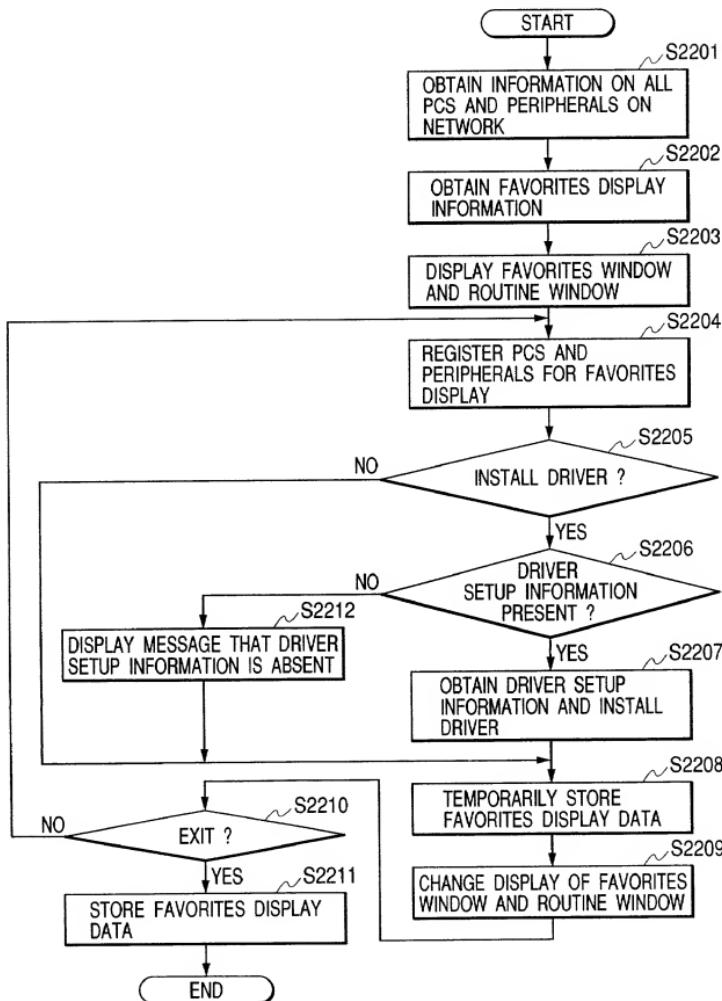
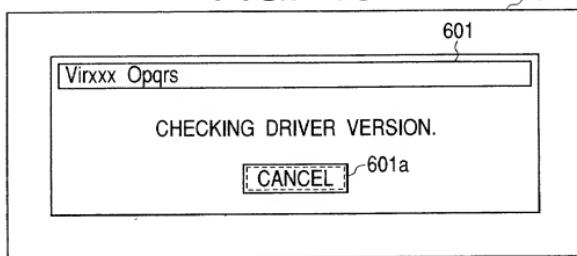
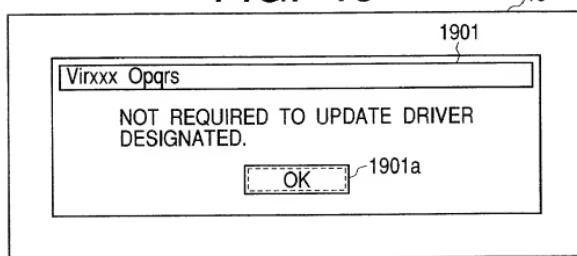


FIG. 18*FIG. 19**FIG. 20*

16
2001
DRIVER VERSION CHECK

PRINTER	DRIVER	VERSION
¥¥PC1¥ABC-123	Canxx PRINTER ABC-123	V6.01
¥¥PC2¥DEF-456	Canxx PRINTER DEF-456	V5.20
¥¥PC3¥GHI-789	Canxx PRINTER GHI-789	V5.20

2002 [UPDATE] [CANCEL] 2003 2004

FIG. 21

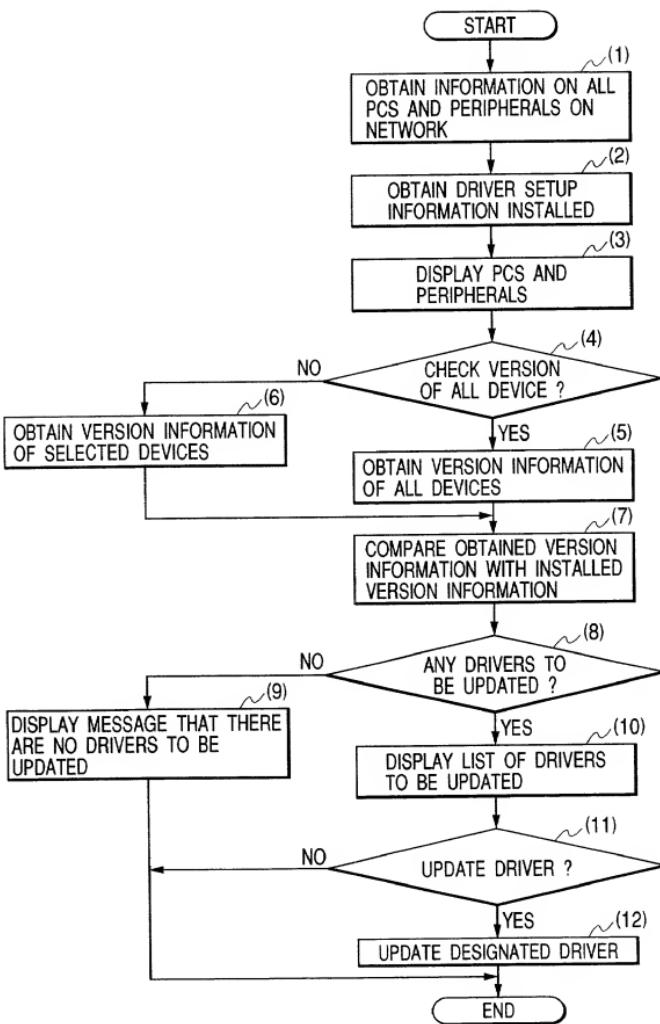


FIG. 22

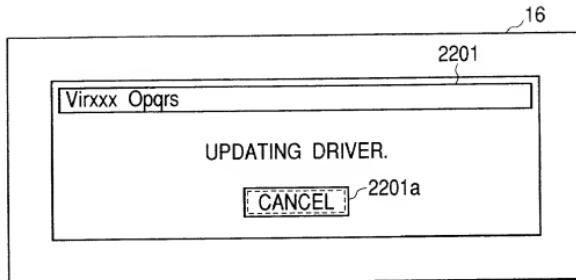


FIG. 23

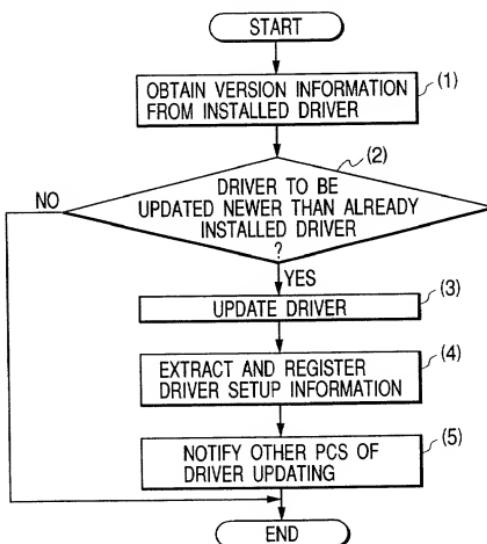


FIG. 24

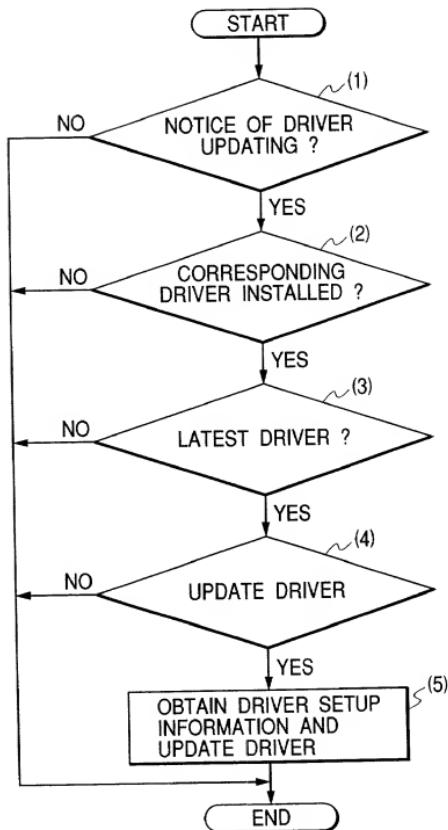


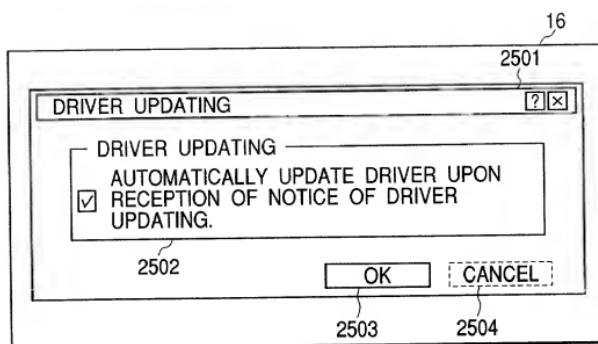
FIG. 25

FIG. 26

MEMORY MAP OF MEMORY
MEDIUM (FD/CD-ROM)

DIRECTORY
1ST DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG. 10
2ND DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG. 12
3RD DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG. 17
4TH DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG. 21
5TH DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG. 23
6TH DATA PROCESSING PROGRAM PROGRAM CODES FOR FLOWCHART OF FIG. 24
⋮

**COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION**
(Page 1)

As a below named inventor, I hereby declare that

My residence, post office address and citizenship are as stated below next to my name

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **INFORMATION PROCESSING APPARATUS, INFORMATION PROCESSING SYSTEM, CONTROL METHOD OF INFORMATION PROCESSING APPARATUS, CONTROL METHOD OF INFORMATION PROCESSING SYSTEM, AND STORAGE MEDIUM HAVING PROGRAMS CAPABLE OF BEING READ AND STORED BY COMPUTER**

the specification of which is attached hereto was filed on _____ as United States Application No. or PCT International Application No. _____ (if applicable)
and was amended on _____

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or §365(b), of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designates at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed.



Country	Application No.	Filed (Day/Mo/Yr.)	(Yes/No) Priority Claimed
JAPAN	11-102068	09 April 1999	YES
JAPAN	11-102075	09 April 1999	YES
JAPAN	2000-078191	21 March 2000	YES

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

Application No.	Filed (Day/Mo/Yr.)	Status (Patented, Pending, Abandoned)
-----------------	--------------------	---------------------------------------

I hereby appoint the practitioners associated with the firm and Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to the address associated with that Customer Number:

FITZPATRICK, CELLA, HARPER & SCINTO
Customer Number: 05514

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole or First Inventor HARUO MACHIDA

Inventor's signature _____

Date _____ Citizen/Subject of JAPAN

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